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REVIEW.

I.

Experiments on the Principle of Life, and particularly on the Principle of the Motions of the Heart and of the seat of this Principle; including the report made to the first class of the Institute upon experiments relative to the Motions of the Heart. *By* M. LE GALLOIS, *M. D. P. &c. &c. Translated by* N. C. *and* J. G. NANCREDE, *M. D. Philadelphia, by* M. THOMAS, 1813.

We are happy to acknowledge our gratitude to the translators of the very interesting work of M. Le Gallois now under consideration. Some of his experiments were concisely noticed in a communication from Dr. Warden of Paris to Dr. Mitchell of this city, and were translated and published as early as 1811; but the mere mention of the experiments, with the conclusions of the author, were not

sufficient to establish as *facts*, such important principles in Physiology. Dr. Ives next gave a short, but luminous view, of the curious and novel doctrine of Dr. Le Gallois, in his Experimental Inquiry into the proximate cause of death, &c.*

Theories on this subject should be cautiously received, as they have generally been hypothetical and fallacious. Physiologists have as assiduously sought for the seat of life, as the alchymist for the philosopher's stone; and until our author, they have not been more fortunate hitherto in the result of their labors. In their attempts to investigate the influence of the *nervous* system, their inquiries have been particularly perplexing and unavailing. Without any definite knowledge of the functions of the different parts of the brain and nerves, and without any adequate comprehension of the intricate connexion between mind and matter, opinions for ages have been successively embraced and rejected; still our knowledge of the brain is, and perhaps ever will remain, vague and imperfect. We may suppose that one portion of this organ is the habitation of the understanding, and another the seat of the will; but imaginary conjectures will probably ever be the summary of such knowledge, as the truth can never be elucidated but by accident or disease. Besides the perplexity peculiar to metaphysical researches, we are embarrassed in the prosecution of this subject, by the impossibility of advancing our knowledge by experiments on the human subject, in which alone all the faculties of the mind are developed. But *other* principles in physiology may, like the character of diseases, and the virtue of medicines, be investigated and improved by observation and experiment; and from the ingenious researches of our author, we cherish the belief, that the source and principles of animal life, which have so long been the subject of unavailing inquiry, are now demonstrably defined. By his very ingenious experiments on the Principles of Life he has attempted partially to analyze, ex-

* See an Experimental Inquiry into the proximate cause of death, in Suspended Respiration in drowning and hanging, with the means of Resuscitation—by Ansel W. Ives, M. D.—New-York, 1814.

perimentally, the functions of the nervous system : (i. e.) to ascertain *the source of sensation and motion ; the principle of the motions of the heart and lungs and to investigate the recipriocal influence existing between the nervous and sanguiferous systems.* Led, as it were, step by step, by the light of one discovery to the investigation of another, he follows that inductive mode of inquiry, which clearly evinces truth to be the object of his pursuit. The interesting memoirs which compose this volume, were read at different times by the author, before the first class of the Institute, and the society of Physicians of the Faculty of Medicine of Paris. In the first section is the result of a series of experiments on the seat of life, which were suggested to the author by an accidental occurrence in a case of parturition. While attempting to ascertain the length of time a fœtus of mature birth would live without breathing after the communication with the mother had ceased ; he was led to inquire why death was immediately produced by decolation. As it was usually supposed to be by the annihilation of the cerebral influence, rather than by hemorrhage, his object was to ascertain the manner in which this influence supported the life of the trunk. He remarked that in decapitated rabbits, life continued in the trunk, and that sensation and voluntary motion subsisted the same length of time, as in rabbits of the same age reduced to a state of asphyxia. That in both cases the duration of life was in an inverse ratio, to the age of the animal. Thus, in the new-born rabbit, signs of life remained after an asphyxia of fifteen minutes ; but in those of thirty days old, all sensation and motion ceased in two minutes. The only difference in the phenomena attending asphyxia and decapitation was, that in the former, the last signs of life were inspiratory motions in the ribs and thorax ; whereas, after decapitation, all efforts to inspire instantly ceased, excepting the head, which continued gaping.

He observed also, that if instead of decapitation the spinal marrow was separated between the occiput and the first cervical vertebra, the phenomena that occurred were precisely the same, viz. all inspiratory motions were annihilated

except the gapings of the head. Hence he concludes that after cutting off the head, or dividing the spinal marrow at the occiput, the animal was only in a state of asphyxia; and that he was so, because he had not the power of introducing air into the lungs. This conclusion was readily confirmed by inflating the lungs, and thus substituting artificial respiration; for, though sensation and motion had previously ceased, they were immediately restored by this operation. He was now led to believe the usually received opinion, that sensation and voluntary motion resided in the brain, was incorrect. His attention was therefore directed to the functions of the spinal marrow. The result of his cruel but ingenious experiments on this organ, will be given in his own words.

"If in a decapitated rabbit which has been most completely revived, and which is kept alive by the inflation of the lungs, the medulla spinalis be destroyed, by pushing an iron rod through the whole length of the vertebral canal, all the phenomena of life instantly disappear, nor is it possible to restore them by any means; only those of irritability are left, which it is known always continue some time after death. If another rabbit be taken, and, instead of decapitating it, a simple incision be made in the vertebral canal near the occiput, and an iron wire be introduced through this opening, destroying the spinal marrow, although in this case the brain continues untouched as well as all its nervous communications with the trunk, life will, nevertheless, instantly and irrevocably disappear in the trunk; it only continues in the head, as is indicated by the gapings.—Finally, if another rabbit be cut in two, each portion, as well as the head in the preceding experiment, remains alive for several minutes, varying according to the age of the animal, which I shall point out hereafter. If immediately after the division has been made, the whole medulla spinalis is destroyed in either of these portions, life instantly disappears in it, whilst it continues in the other; and if this portion of the spinal marrow be destroyed, all the parts which receive their nerves from this portion, are struck with death at the

same time, while the remainder of this same portion continues alive.

These experiments prove not only that the life of the trunk is dependent upon the medulla spinalis, but they also prove that the life of each part is specially dependent upon the portion of the spinal marrow from which it receives its nerves. Besides, it is easy to demonstrate that the source of sensation, and of all the voluntary motions of the trunk, exclusively belong to the spinal marrow, and that none of the viscera of the chest or abdomen have any immediate share in it.—For if you open the thorax or abdomen of a rabbit and tear out the heart, the lungs, the diaphragm, the intestines, all the viscera of these two cavities, it will continue alive after this cruel operation; and besides, if you cut off its head, although then reduced to its skeleton, to its spinal marrow and muscles, it is still living; but if partially or entirely you destroy the spinal marrow, it is immediately struck with death which is either partial or general.

It is certain, therefore, that the life of the trunk has its immediate principle neither in the brain, nor in any of the viscera of the breast or abdomen; but it is no less evident that all those viscera are indispensable to maintain it. Now, considering the relations in which they stand, the foregoing facts evidently prove, that as to the cerebrum, the mechanical phenomena of respiration, that is, those movements, by which an animal introduces air into its lungs, are produced by the immediate action of that organ.—Thus it is principally, inasmuch as the maintenance of life depends upon respiration, that it is dependent upon the brain; and here arises a great difficulty—The phrenic and all the other nerves of the muscles employed in the mechanical phenomena of respiration, arise from the spinal marrow in the same manner as those of the other muscles of the trunk. How happens it then, that after decapitation, respiration is destroyed, while all the other motions continue? this is in my opinion one of the great mysteries of the nervous power—a mystery that will be discovered sooner or later; and the discovery of which will throw the greatest light

upon the mechanism of the functions of this wonderful power.*

But, whatever be the organic arrangements, through the medium of which the mechanical phenomena of respiration are produced by the brain, this dependency is unequivocal; and it is further ascertained that it is through the spinal marrow that it is exercised. For, as I have already observed, if the spinal marrow be simply divided near the occiput, the animal is exactly in the same state as if its head had been cut off.

It is not upon the whole of the brain that respiration depends, but upon a particular and small part of the *medulla oblongata*, situated at a small distance from the occipital foramen, and near the origin of the nerves of the eighth pair (pneumo gastric)—for if we open the cranium of a young rabbit, and extract the brain in successive portions, beginning by the anterior part, cutting it into slices, we may then take away the whole cerebrum, then all the cerebellum, and part of the medulla oblongata, without stopping respiration. But it instantly ceases when we cut the origin of the nerves of the eighth pair." page 47, &c.

Upon this curious and novel doctrine, the author proceeds to account for the life of cold blooded animals, months after decapitation. He supposed the life of these animals also to reside in the spinal marrow; and that in them the same portion of the brain supported respiration as in warm blooded animals—that as they suffered but little by hemorrhage, they would live after decapitation until they died of inanition, if that portion of the medulla oblongata were not destroyed which gives rise to the eighth pair of nerves. This opinion was confirmed by experiments on salamanders. When all the brain was destroyed above the occipital foramen, they would live for months; but when the section was

* Some facts, observed in the course of my experiments, lead me to believe that the accessary nerve of the eighth pair, acts a principal part in this state of dependency, in which respiration is found to be upon the brain. This nerve has a singular distribution and course, which undoubtedly have a relation to some use which no one has hitherto been able to elucidate.

made lower down, including the origin of the eighth pair of nerves, death ensued much sooner. Now, as inflation of the lungs supplies the place of natural respiration, the question arises, Why warm blooded animals cannot be kept alive by that means, till they die of inanition after any decapitation? The answer is briefly given in the following paragraph, " It is to be remarked that not only the mechanical phenomena of respiration depend upon the brain, but the peculiar functions of the lungs are also produced by it, through the nerves of the eighth pair, and it appears that both depend upon the same part of the brain; for, as we have already seen, the place in the medulla oblongata, where the primum mobile of the mechanical phenomena of respiration resides, includes the origin of the nerves of the eighth pair. Now we know that the section of those nerves, without any other wound, kills animals more immediately than abstinence." page 56,

Hence he concludes that warm blooded animals may be kept alive by artificial respiration, the same length of time that they will live after the section of the eighth pair of nerves; but cold blooded animals will live longer, as in them respiration is partially supplied by breathing through the skin, (as is proved in another part of the work.) He concludes, therefore, that the brain is indispensable to the support of life, because it incloses the primum mobile of respiration; to the lungs and heart is ascribed the office of imparting to the blood its arterial character, and distributing it through the different parts of the body; to the abdominal viscera the province of repairing the waste, which this fluid continually undergoes, by the various secretions. Now as sensation and motion have but a limited duration, after the blood has stopped circulating, or after it has lost its arterial character, he supposes " that life results from the impression of arterial blood in the body. We have seen that the brain and the spinal marrow are the sources of sensation, of motion, in short of every thing that constitutes life. It may therefore be asserted, that general life, the existence of the individual, is produced by a certain im-

pression of the arterial blood upon the brain and spinal marrow; an impression which, when once made, has always a duration which is longer or shorter according to the species and age of the animal; so that life can only be maintained by the continual renewal of this impression, nearly in the same manner as a body moved by the power of a first impulse cannot continue to move indefinitely unless this impulse is repeated at intervals. If this be the case, whenever this renewal is interrupted in any portion of the spinal marrow, life, after having continued for a longer or shorter time, yet determined according to the age and species of the animal, in those parts receiving their nerves from this portion of the medulla, must be entirely extinguished. This is what we, in fact, observe, when we tie the vorta of a rabbit towards the posterior part of the breast or the anterior part of the belly. Sensation and movement subsist at first in the posterior part, but they weaken by degrees more and more, and soon after wholly disappear." Page 58, 59.

From the foregoing facts, which are stated in the first section, the author infers the belief, that the maintenance of life in any part of the body essentially depends upon two conditions—One, the integrity of the corresponding portion of the spinal marrow, and its nervous communications; the other, the circulation of arterial blood in this part. As long as these conditions remain in full force, he supposes life may be preserved in any section of the body.

In his second memoir he has confirmed this supposition by direct experiment. By introducing an iron probe into the vertebral canal of rabbits, he destroyed at various times, in separate animals, the cervical, dorsal, and lumbar portions of the spinal marrow, and in all cases sensation and motion were instantly annihilated in that section of the body, corresponding with the portion of spinal marrow destroyed; while life continued in the other sections of the body for a longer or shorter time, varying in proportion to the age of the animal, as before observed. In these experiments, which were often repeated, all signs of life disappeared sooner after the destruction of the medulla cervicalis, than when

the dorsal or lumbar portions were destroyed; but by a simultaneous destruction of the three portions, life in the body in all cases instantaneously ceased, the gapings of the head only continued. From these experiments he was led to believe, that every portion of the spinal marrow exercised on life two distinct modes of action. In one it constitutes life essentially in all parts which it supplies with nerves, in others it contributes to the maintenance of it, in all those which receive theirs from the spinal marrow."

The author's next inquiry was, How the two conditions, which he supposed sufficient to maintain life in any part of the body, viz. the integrity of the spinal marrow, and the circulation of the blood, were effected by the last mode of action? After cutting transversely the spinal marrow of a rabbit, between the last dorsal, and first lumbar vertebra, sensation and motion continued both in the anterior and posterior parts of the body, but no connexion existed between them. When one of the hind paws were irritated all the hind portion became agitated, but no effect was produced on the fore part; and *vice versa*. Thus, by this section, two distinct centres of sensation were produced, so that fifteen or twenty minutes after, when the animal was perfectly alive, the destruction of all the lumbar portion of the spinal marrow produced no immediate effect upon the anterior part of the body, though by this operation life was wholly extinguished in three minutes.

Having proved that the destruction of one portion of the medulla spinalis had no effect upon the integrity of the remaining portions, he was now led to examine its effect upon the second condition; viz. the circulation of the blood. To suppose the power of the heart to be derived from the spinal marrow, was to doubt the correctness of the well established theory of Haller. But with a boldness and decision, peculiar to himself, our author tenaciously follows the light of experiment without being deterred by theoretical prejudices. It was known that the motions of the heart continued after the destruction of the spinal marrow, but as it was known that they continued also after death, and even

after the heart was detached from the body ; it was presumed that these motions were without power, and that the contractions of the heart, after the destruction of the lumbar portion of the spinal marrow, were too feeble to continue the circulation. This presumption he now proceeds to prove—After a laborious inquiry, he ascertains what signs infallibly show the exact time the circulation stops. His ingenious experiments on this subject, as well as the subsequent experiments on the spinal marrow, are too numerous to be detailed in this paper ; the result of the latter only will be briefly noticed.

By a section of the spinal marrow of a rabbit, below the occiput, sensation was extinguished and the circulation stopped, but by inflating the lungs they were both restored. In thirty-two minutes after the section of the spinal marrow, decapitation was performed above the first cervical vertebra. The head continued to gape for several minutes, the inflation of the lungs was renewed, and at fifty minutes sensibility and circulation continued. An iron probe was now passed through the whole length of the vertebral canal, which instantaneously annihilated all sensation and motion, the body became flaccid and the circulation stopped : at fifty one minutes inflation produced no effect. In another rabbit the whole of the spinal marrow was destroyed without decapitation, in the same manner as the last. The whole body was immediately flaccid and dead. At four minutes the lungs were inflated but produced no signs of life. This experiment was often repeated with the same effect. When the medulla cervicalis was alone destroyed, life was immediately extinguished in the anterior part of the body, but continued in the rest ; the circulation which continued very weak, was accelerated four minutes after by inflation : in eleven minutes all signs of life in the body ceased. In another rabbit the dorsal portion of the spinal marrow was alone destroyed ; the head, neck, and hind part continued alive, the middle part instantly died—the circulation was weakened : at fifteen minutes it continued to live and breathe ; the circulation still continued. In another rabbit

the lumbar portion of the spinal marrow was alone destroyed; all the hind part of the body instantly died—the rest continued alive: at fifteen minutes the circulation continued and the animal supported itself upon its fore legs.

The foregoing experiments were made on rabbits the day of their birth; they were afterwards repeated on those that were ten days old, and again on those that were twenty days old. In both cases the result was similar—the duration of life being always in an inverse ratio to the age of the animal. He concludes, therefore,

"That the destruction of the spinal marrow suddenly stops the circulation, and that consequently the motions of the heart derive all their power from the medulla spinalis. Those which still subsist, either after this destruction, or after the heart has been freed from the action of this nervous power in any other manner, and which have deceived Haller and the authors of his school, are motions without power, and perfectly analagous to the irritable motions, observed in the other muscles for a longer or shorter time after death. In the latter, those motions only take place when the muscle or the nerve distributed to it, is directly stimulated; and one stimulus only produces one motion. In the heart the motions are repeated spontaneously, because the blood it contains is its natural stimulus. It is further demonstrated, that the heart receives some of its power indiscriminately from every part of the spinal marrow. Of the two modes of action, which each portion of the medulla exercises upon life, one by which it constitutes essentially all the parts which receive their nerves from it, the other by which it contributes to maintain it in the rest of the body, the latter therefore depends upon the powerful influence which it exercises upon the motion of the heart." p. 110.

By a great number of experiments the author has clearly demonstrated, that it is not from a particular portion of the spinal marrow that the heart derives its power, but from the whole. Death ensued soonest after the destruction of the medulla cervicalis; but after this experiment, when rightly

conducted, life continued many minutes: hence he concludes that as the heart receives most of its nervous filaments from the great sympathetic nerve, that it is only through that nerve that it can receive its energy from every point of the spinal marrow; and that as the organs which this nerve supplies, derive their power from every point of the spinal marrow, and not from the brain, it explains why the actions of these organs continue through life uninterrupted by the will. Having shown that sensation and motion have their source in the spinal marrow, and that the circulation of the blood exclusively depends upon this organ, he proceeds to examine the effects of arterial blood in the support of life. This he determined by interrupting the circulation with ligatures upon the aorta. From a number of these experiments one only will be detailed to exemplify the result of the whole.

"I performed anew the ligature of the abdominal aorta, by opening the belly of a rabbit thirty days old. I passed a thread under the aorta, and tied it immediately below the cæliac artery, which nearly corresponds with the beginning of the lumbar vertebræ. Motion and sensation disappeared in the hind parts in about two minutes and a quarter, but the forepart continued alive—The animal supported itself on its fore feet, carried its head well, and respiration was performed with ease. Fifteen minutes after it was still in the same state; the flaccidity and absolute insensibility, and in a word the apparent death of all the posterior parts, left no doubt that the lumbar portion of the medulla spinalis had entirely lost its action, and no longer contributed in any degree to the maintenance of the circulation. Nevertheless, to obtain a more direct proof, I destroyed it at the period of fifteen minutes; the animal appeared perfectly sensible, upon the introduction of the probe in the vertebral canal, between the last dorsal and the first lumbar vertebra; but it manifested no further signs of pain, the moment the instrument had penetrated as far as the lumbar vertebra; and this destruction, which, at the instant when it is performed, is always accompanied with strong convul-

sions in the hind part, when the influence of the spinal marrow is unimpaired, did not produce the slightest motion;—a certain proof that all this portion of the medulla spinalis was dead." Page 113.

It has been observed, that after decapitation the *mechanical* phenomena of respiration is only supplied by artificial inflation, and that the brain exercises a second mode of action on the lungs through the medium of the eighth pair of nerves. In the author's third and last memoir he proceeds to investigate the functions of these nerves. He finds that the cause of death, which had ensued after their division, had by various authors been placed in three different organs, the heart, the stomach, and the lungs. From previous experiments he was led to believe that the effect was most immediate upon the latter and that the time life continued after the operation was in an inverse ratio, to the age of the animal, the same as after ordinary asphyxia. But this last opinion did not comport with the result of subsequent experiments. He divided the par vagum in a number of young dogs all of which died in less than half an hour after the operation with symptoms of asphyxia. This unexpected occurrence was afterwards accidentally explained. The author was one day making an experiment upon a little dog and to prevent his cries, cut the recurrent nerves, which to his astonishment produced all the phenomena that followed the division of the eighth pair. On reflecting that the recurrent nerves were necessarily divided in cutting the par vagum he was satisfied that death was produced by the same cause in the last, as in the former animals. He divided the recurrents in another dog, which immediately produced all the signs of asphyxia, but before sensibility was extinguished an opening was made into the trachea and the animal soon recovered. By frequently repeating this experiment he demonstrated that the division of the recurrent nerves produced suffocation by paralyzing the arytaenoid muscles, and thus relaxing the ligaments of the glottis. But contrary to a pre-conceived opinion it was found that this effect was only produced in young animals, that the dispnæa

was less considerable as the animal was older, and that at three months old the animal would not die. He was now led to an explanation of the sudden case of death, which some authors had observed after the division of the par vagum, the effect evidently having been complicated with that produced by the division of the recurrents, for those who were so particular as to notice the age of the animals subjected to experiments, observed that they were cats and dogs, that were newly born. By first dividing the recurrent nerves, and then making a large hole in the trachea and taking away the piece so that respiration might be restored, he was enabled by subsequent experiments to determine correctly the functions of the par vagum. From all his experiments on this nerve he concludes that by destroying it the heart, the stomach, and the lungs are all affected, but the latter most immediately and fatally—that the effect upon the heart, though it cannot be precisely determined, is not such as to stop the circulation or suddenly to produce death. That the stomach suffers more violently as digestion is stopped, but that death comes on at a period, and with such a series of symptoms, as does not permit us to place its cause in this organ.

Finally that—" these symptoms are those which depend upon an affection of the lungs; they are the most remarkable and the most constant which we observe in the experiment in question. Respiration is deep and laborious, and becomes so more and more—It sometimes takes place with a frothy noise, which can be heard in the thorax. The arterial blood assumes a darker hue and the animal loses its heat. After death we find the lungs swelled with air, partly filled with blood and partly with a serous and often frothy fluid, and inspection of them clearly shews that the exterior air could no more penetrate, or if it did, it was in a very small quantity. The formation, not sudden, but progressive, and more or less rapid, of the sanguine engorgement, and of the serous effusion in the lungs, accounts for the ever increasing progress of dyspnea.

From all these facts, we may conclude that the division of

the par vagum kills animals by producing asphyxia, and that asphyxia may take place in three different manners: 1st. By the diminution of the aperture of the glottis—2d. By the sanguine engorgement of the lungs—3d. By the effusion of a serous fluid in the bronchiæ—According to the species, age and constitution of the animals, death may be occasioned by one alone of these three modes of asphyxia, or by two, or even by varied combinations of the three." Page 214.

Such are briefly the novel doctrines of Dr. Le Gallois. As they are the result of a chain of reasoning and experiments reciprocally connected, every part is essential to a perfect explanation of the whole. We have, therefore, found it extremely difficult to give by detached portions a general and explicit representation of the whole work. We do not, however, expect our readers to be satisfied with a partial acquaintance with the labors of this ingenious author, but hope they will be invited by it, candidly to examine his volume for themselves; when we trust their judgment will acquit us of the impeachment of credulity. It is comprised in about three hundred octavo pages, which are not burdened with adventitious matter, but occupied by the investigation and proof of the doctrine in question. Annexed to the memoirs of Le Gallois, is a learned and judicious report, in confirmation of his doctrine, by De Humbolt, Halle and Percy, who where delegated by the first class of the Imperial Institute of France, to investigate this curious and novel doctrine. These gentlemen the most distinguished Philosophers and Physiologists of the age, were equally able to decide upon the accuracy of our author's experiments and the correctness of his deductions.

II.

History of James Mitchell, a Boy born Blind and Deaf, with an Account of the Operation performed for the recovery of his Sight. By JAMES WARDROP, *F. R. S. Edinburgh.* 4*to. pp.* 52. *London*, 1813.

From the Edinburgh Medical and Surgical Journal.

The unfortunate youth, whose history we are about to lay before our readers, has been placed, by an almost unexampled infliction of Providence, at an immeasurable distance from his fellow-creatures. Deprived of the principal means of intercourse with the external world, he has been doomed to solitude and ignorance, and though evidently possessed of *capacity* for moral and intellectual improvement, he at present exists bereft in a great degree of the possibility of having this capacity cultivated except to a very limited extent.

"When brought to London, and put under my care," Mr. Wardrop observes, "he had passed the fourteenth year of his age. He was accompanied by his father, a respectable clergyman in the north of Scotland, and by his sister; from whom, and from the observations I was enabled to make, the subsequent history has been collected.

"He had the usual appearances of strength and good health, and his countenance was extremely pleasing and indicated a considerable deal of intelligence.

"On examining the state of his eyes, the pupil of each was observed to be obscured by a cataract.

"In the right eye the cataract was of a white color and pearly lustre, and appeared to pervade the whole of the crystalline lens. The pupil, however, readily dilated or contracted, according to the different degrees of light to which it was exposed. The cataract in the left eye was not equally opaque; about one-third of it being dim and clouded, arising,

as it appeared, from very thin dusky webs crossing it in various directions, the rest being of an opake white colour. The pupil of this eye did not, however, seem so susceptible of impressions from varieties in the intensity of light, as that of the other eye, nor did he employ this eye, so often as the other, to gratify his fondness for light.

"I could discover no defect in the organization of his Ears.

"Soon after his birth, his parents observed the cataracts in both eyes, and they also discovered, at a very early age, that he was Deaf, as no sounds appeared to excite his attention, and no noise seemed to awake him during sleep.

"About the time of life when he was attempting to walk, he began to be attracted by bright and dazzling colours, and to derive pleasure from striking his teeth with sonorous bodies. He also appeared anxious to smell and feel those substances which had become known to him through the medium of his other senses."

"He used to hold between his eye and luminous objects, such bodies as he had found to increase the quantity of light; and it was one of his chief amusements to concentrate the sun's rays, by means of pieces of glass, transparent pebbles, or similar substances, which he held between his eye and the light, and turned about in various directions. There were other modes by which he was often in the habit of gratifying his desire of light. He would go to any outhouse or room within his reach, shut the windows and doors, and remain there for a considerable time, with his eyes fixed on some small hole or chink which admitted the suns rays, eagerly catching them. He would also, during the winter nights, frequently retire to a corner of a dark room, kindle a light for his amusement. Such indeed seemed to be the degree of pleasure, which he received from feasting his eyes with light, that he would often occupy himself, in this manner for several hours without interruption. In this, as well as in the gratification of other senses, his countenance and gestures displayed a most interesting avidity and curiosity."

"In his childhood, one of the most remarkable circumstances relating to him, was this eager desire to strike any hard substance against his teeth. He was particularly gratified when it was a key, or any instrument which produced a sharp sound; and he struck it always upon his front teeth. When a ring of keys was given to him, he seized them with great avidity, and tried each separately by suspending it loosely between two of his fingers, so as to allow it to vibrate freely; and after tingling them amongst his teeth, in this manner, he generally selected one from the others, the sound of which seemed to please him most. This, indeed, was one of his most favorite amusements, and it was surprising how long it would arrest his attention, and with what eagerness he would, on all occasions, renew it. A gentleman observing this circumstance, brought to him a musical snuff-box (a French trinket containing a small musical instrument, which played airs by means of a spring,) and placed it between his teeth. This seemed not only to excite his wonder, but to afford him exquisite delight; and his father and sister, who were present, remarked, that they had never seen him so much interested on any former occasion. Whilst the instrument continued to play, he kept it closely between his teeth, and even when the notes were ended, he continued to hold the box to his mouth, and to examine it minutely with his fingers, his lips, and the point of his tongue, expressing, by his gestures and by his countenance, extreme curiosity.

"Besides the musical snuff-box, I procured for him a common *musical key*. When it was first applied to his tooth, he exhibited expressions of fear mixed with surprise. However, he soon perceived that it was attended with no harm, so that he not only allowed it to be renewed, but he soon acquired the habit of striking it on his own hand, so as to make it sound, and then touching his teeth with it. One day his father observed him place it upon the external ear. He has also, on some occasions, been observed to take notice of, and to appear uneasy with very loud sounds. Though, therefore, the teeth, besides being organs of mas-

tication, and also serving as organs of touch in examining the food in the mouth, so that the hard and indigestible part may be rejected, in this boy they seemed to be the best channel of communicating sound to the auditory nerve.

"His organs of Touch, of Smell, and of Taste had all acquired a preternatural degree of acuteness, and appeared to have supplied, in an astonishing manner, the deficiencies in the senses of Seeing and Hearing. By those of Touch, and Smell in particular, he was in the habit of examining every thing within his reach. Large objects, such as the furniture of a room, he felt over with his fingers, whilst those which were more minute, and which excited more of his interest, he applied to his teeth, or touched with the point of his tongue. In exercising the sense of Touch, it was interesting to notice the delicate and precise manner by which he applied the extremities of his fingers, and with what ease and flexibility he would insinuate the point of his tongue into all the inequalities of the body under his examination.

"But there were many substances which he not only touched, but smelled during his examination.

"To the sense of Smell, he seemed chiefly indebted for his knowledge of different persons. He appeared to know his relations and intimate friends, by smelling them very slightly, and he at once detected strangers. It was difficult, however, to ascertain at what distance he could distinguish people by this sense; but, from what I was able to observe, he appeared to be able to do so at a considerable distance from the object. This was particularly striking when a person entered the room, as he seemed to be aware of this before he could derive information from any other sense, than that of smell.

"In selecting his food, he was always guided by his sense of smell; for he never took any thing into his mouth, without previously smelling it attentively.

"His Taste was extremely delicate, and he showed a great predilection for some kinds of food, whilst there were others of which he never partook. He had on no occasion tasted butter, cheese, or any of the pulpy fruits; but he

was fond of milk, plain dressed animal food, apples, peas, and other simple nutriment. He never took food from any one, but his parents or sister."

"Impressions transmitted to the human soul through the medium of *one* sense might call into being some of the most important operations of intellect. Facts have been given to prove, that this boy possessed both recollection and judgment. We are ignorant of the qualities of bodies which influenced his determinations and his affections. On all occasions, however, it was clear, that he made his experiments on the objects which he examined, with all the accuracy and caution that his circumscribed means of gaining intelligence could admit. The senses he enjoyed being thus disciplined, acquired a preternatural degree of acuteness, and must have furnished him with information respecting the qualities of many bodies, which we either overlook, or are in the habit of obtaining through other channels.

"Perhaps the most striking feature of the Boy's mind, was his avidity and curiosity to become acquainted with the different objects around him. When a person came into the room where he was, the moment he knew of his presence, he fearlessly went up to him, and touched him all over and smelled him with eagerness. He showed the same inquisitiveness, in becoming acquainted with every thing within the sphere of his observation, and was daily in the habit of exploring the objects around his father's abode. He had become familiar with all the most minute parts of the house and furniture, the out-houses, and several of the adjacent fields, and the various farming utensils.

"He showed great partiality to some animals, particularly to horses, and nothing seemed to give him more delight than to be put on one of their backs. When his father went out to ride, he was always the first to watch his return; and it was astonishing how he became warned of this, from remarking a variety of little incidents. His father putting on his boots, and such like occurrences, were all accurately observed by the boy, and led him to conclude how his father was to be employed. In the remote situa-

tion where he resided, male visitors were most frequent, and therefore the first thing he gen rally did, was to examine whether or not the stranger wore boots; if he did he immediately quitted him, went to the lobby, found out, and accurately examined his whip, then proceeded to the stable and handled his horse, with great care, and the utmost attention. It occasionally happened that visitors arrived in a carriage. He never failed to go to the place where the carriage stood, examined the whole of it with much anxiety, and amused himself with the elasticity of the springs.

"The locks of doors attracted much of his notice and he seemed to derive great pleasure from turning the keys.

"He was very docile and obedient to his father and to his sister, who accompanied him to London, and reposed in them every confidence for his safety, and for the means of his subsistence.

"When a stranger approached him, he eagerly began to touch some part of his body, commonly taking hold of the arm, which he held near his nose, and after two or three strong inspirations, through the nostrils, he appeared to form a decided opinion regarding him. If this was favorable, he showed a disposition to become more intimate, examined more minutely his dress, and expressed by his countenance more or less satisfaction: but if it happened to be unfavourable, he suddenly went off to a distance, with expressions of carelessness or of disgust.

"When he was first brought to my house, to have his eyes examined, he both touched and smelled several parts of my body, and the following day, whenever he found me near him, he grasped my arm, then smelled it, and immediately recognized me; which he signified to his father, by touching his eye-lids with the fingers of both hands, and imitating the examination of his eyes, which I had formerly made. I was very much struck with his behaviour during this examination. He held his head, and allowed his eyes to be touched, with an apparent interest and anxiety, as if he had been aware of the object of my occupation. On

expressing to his father my surprise, at the apparent consciousness of the Boy of what was to be done, he said that he had frequently, during the voyage from Scotland, signified his expectation and his desire that some operation should he performed on his eyes. About two years before this period, he had been brought up to London by sea, with the hope of getting an attempt made to improve his sight and his hearing. The membrane of the tympanum, of both ears, was punctured by Mr. Astley Cooper, with no benefit; and several medical gentlemen examined his eyes, and endeavored to perform some operations on them. In this, however, they completely failed, from the powerful resistance which he made to all their efforts to secure him and hold the eye quiet. The lively remembrance, which he seemed to have, of these events, and the recurrence of the same circumstances attending his coming here at this time, made him very naturally conceive that his parents had again brought him from home, with the same view as formerly. During the first examination, and on several future ones, when I purposely handled the eye roughly, I was surprised to find him submit to every thing that was done with fortitude, and complete resignation; as if he was persuaded that he had an organ imperfectly developed, and an imperfection to be remedied by the assistance of his fellow-creatures.

"Many little incidents in his life has displayed a good deal of reason and observation. On one occasion a pair of shoes were given to him, which he found too small, and his mother put them aside into a closet. Some time afterwards young Mitchell found means to get the key of the closet, opened the door, and taking out the shoes, put them on a young man, his attendant, whom they fitted exactly.

"On another occasion, finding his sister's shoes very wet, he appeared uneasy until she changed them.

"From his father having had farm servants, he attempted to imitate them in some of their employments, and was particularly fond of assisting them in cleaning the stable.

"At one time, when his brothers were employed making basket-work, he attempted to imitate them; but he did not seem to have patience to overcome the difficulties he had to surmount.

"In many of his actions, he displayed a retentive memory, and in no one was this more remarkable, than on his second voyage to London. Indeed, as the objects of his attention must have been very limited, it is not to be wondered at, that those few should be well remembered.

"He seemed to select and show a preference to particular *forms*, *smells*, and other *qualities* of bodies. He has often been observed to break substances with his teeth, or by other means, so as to give them a form which seemed to please him. He also preferred to touch those substances which were smooth, and which had a rounded form; and he has been known to employ many hours in selecting from the channel of a river, which was near his father's house, small stones of a rounded shape, nearly of the same weight, and having smooth surfaces. These too he would arrange in a circular form on the bank of the river, and place himself in the centre of the circle. He also seemed to be much pleased with some Smells, and equally disgusted with others, and this latter he expressed by squeezing his nostrils, and turning his head from whence the smell came. He showed an equal nicety in the selection of his food.

"He sometimes showed a good deal of *drollery* and *cunning*, particularly in his amusements with his constant companion and friend, his sister. He took great pleasure in locking people up in a room or closet, and would sometimes conceal things about his person, or otherwise, which he knew not to be his own property; and when he was detected doing so, he would laugh heartily.

"That he was endowed with affection and kindness to his own family cannot be doubted. The meeting with his mother; after his return from London (to be afterwards noticed) showed this very strongly. On one occasion, finding his mother unwell, he was observed to weep; and on another, when his attendant happened to have a sore foot, he

went up to a garret room to find a particular stool for his foot to rest upon, which he himself had made use of, on a similar occasion, long before. He seemed fond too of young children, and was often in the habit of taking them up in his arms.

" His disposition and temper were generally placid, and when kind means were employed, he was obedient and docile. But if he was teaz d or interrupted in any of his amusements, he became irascible, and sometimes got into violent paroxysms of rage. At no other time did he ever make use of his voice, with which he produced most harsh and loud screams.

" It is not one of the least curious parts of his history, that he seemed to have *a love of finery.* He early showed a great partiality to new clothes, and when the tailor used to come to make clothes at his father's house (a practice common in that part of the country), it seemed to afford him great pleasure to sit down beside him whilst he was at work, and he never left him until his own suit was finished. He expressed much disappointment and anger, when any of his brothers got new clothes, and none were given to him. Immediately before he came to London, each of his brothers got a new hat, his father considering his old one good enough for the sea voyage. Such, however, was his disappointment and rage, that he secretly went to one of the out-houses, and tore the old hat to pieces. Indeed, his fondness for new clothes afforded a means of rewarding him when he merited approbation, and his parents knew no mode more severe of punishing him than by obliging him to wear old ones.

" With respect to the means which were employed to communicate to him information, and which he employed to communicate his desires and feelings to others, these were very ingenious and simple. His sister, under whose management he chiefly was, had contrived signs addressing his organs of Touch, by which she could control him, and regulate his conduct. On the other hand he, by his gestures could express his wishes and desires. His sister employed

various modes of holding his arm, and patting him on the head and shoulders, to express consent and different degrees of approbation. She signified *time* by shutting his eye-lids and putting down his head; which done once, meant one night. He expressed his wish to go to bed by reclining his head, distingulshed me by touching his eyes, and many workmen by imitating their different employments. When he wished for food he pointed to his mouth, or to the place where provisions were usually kept."

The foregoing extracts will enable our readers to form a sufficiently accurate judgment both of the acquirements and general character of Mitchell. It is evidently more completely evolved, and evinces greater variety and interest than could have been reasonably expected. When we consider the few qualities that he was able to perceive, and the unsatisfactory information they afforded, it is impossible not to be struck with that fearlesss and intrepid spirit, which could induce a being like him to pursue the objects of his curiosity with the eagerness and perseverance which he invariably displayed. Had he derived *no gratification* at all from light, and had his ears been *totally* insensible to sounds in whatever way transmitted, it is by no means likely that he would have been stimulated by his other senses, to make the experiments and exertions for which he is so remarkable. In such trials, however, the aids derived from the attentions of his family must not be overlooked. His sister, in particular, appears to have conducted his education to a certain extent, with much care and ingenuity. The principle she has adopted, is the only one that is suitable, while his organs remain in their present mutilated condition. We regret, however, that the tangible language which she employed, had not been pushed to its greatest possible extent. The quickness, nay even the genius of the boy was such, that it might evidently have been rendered a channel of information much more precise and extensive than it has hitherto been. This remark is made without the slightest intention of wounding the feelings of an ingenious and amiable young lady. She has done more than most people

in her situation could have accomplished, and we only regret that the utmost advantage had not been derived from her discovery.*

It may never be in the power of man to ascertain with accuracy the nature of the elementary and original perceptions conveyed exclusively to the mind by each individual sense; because the opportunities for observation are both few and unsatisfactory. We do not indeed believe that the philosophy of character requires very great precision in this respect. The succession of impressions may be sufficiently marked, as well as the combinations which result from such impressions, without positively allotting to each sense its peculiar and exclusive share in the formation of intellectual phenomena. Here, we believe, experience fully establishes what philosophy teaches. The removal of a cataract does not at once invest the organ of vision with all its powers and properties, nor convey to the "mind's eye" a flood of light. Long and frequent discipline is required to train our senses to their perfect duties. This discipline is obtained under circumstances where attention cannot be well excited, and therefore is unheeded. The most experienced eye, when suddenly introduced to a great assemblage of universal objects, is, for a time, incapable of analyzing the different parts of the spectacle, and reducing them to order. Every thing appears, at first, confused, and it is not till after patient and repeated examination that the intricacy is removed. What all men, more or less, experience in unravelling novel and complex impressions, must be felt by persons who have any of their senses suddenly restored, when applying their newly acquired power of perception to the examination of the most simple properties. The whole of infancy is passed in such examinations, and they differ not in their effects from the inquiries which we pursue in our maturer years. Without attempt-

* In attributing this discovery to Miss Mitchell, we are not unacquainted with the observations of Sicard. As far as she is concerned, the plan was original.

ing to speculate upon the accidents and events which model individual characters, and give them their various attainments, it is a truth which admits not of contradiction, that the progress of intellect, and the due use and discipline of our organs of perception, are inseparably connected together. The impressions so received, produce very different effects in different individuals; but from their agency results the developement of our faculties, and ultimately the whole of the moral or intellectual excellence, of which our nature is susceptible.

These remarks are amply confirmed by the history of Mitchell. They are also well illustrated by another case which we have recently observed. A very few particulars respecting it, therefore, may not be misplaced here. This boy is about the age of thirteen. He was born blind. But the loss of his sight has not been his only misfortune. At an early age he was deprived of both his parents, and the greater part of his life has been spent in a parish workhouse. There, his existence appears to have been purely animal. His few wants were supplied, but no attempts seem to have been made to excite his curiosity, or to communicate information. He had scarcely any language, and the words he knew referred merely to a few particular facts which he was compelled to observe, and their application extended not beyond the bounds of his own very limited experience.

An operation, after the plan recommended by the late Mr. Saunders, was performed. He was thereby enabled to distinguish colours; but it was not until after repeated and very laborious experiments, that the colour and its name became completely associated together. Similar difficulty was encountered in teaching him to mark, by appropriate language, difference of shape, and even of magnitude. The import of the words roundness and squareness, for example, could not be conveyed to him, but by impressing angular and circular bodies strongly and frequently upon his sense of touch. Of time or distance he had no accurate notions. It is also worthy of remark, that the muscles which move

the eye-lids, and the eye itself, had been so little employed, that they had become almost involuntary. When desired to open the eye, he invariably at first had recourse to his finger, and instead of directing the eye itself to any object which he was surveying, he either moved his head, or the object, till it was brought to a proper point for observation.

The peculiarities dependent upon blindness, are certainly not the most interesting in this case. From an unhappy combination of circumstances, he has existed in a state of ignorance which is almost incredible; and, at an age when a considerable degree of information is generally obtained, he, in point of *physical* and *moral* acquirements, is not much superior to an infant. It has been peculiarly interesting to observe the developement of his faculties, in consequence of a more precise and regular use of his organs of perception, and his more extended acquaintance with the external world. Impressions which he had formerly received, but which had lain dormant and unapplied in his memory, begin to be called, as it were, into a new existence, to be compared with his more recent acquirements, and to afford him the means of making new arrangements and combinations. In consequence of this process, he has repeatedly and unexpectedly disclosed some facts connected with his previous habits and condition, which never could be obtained before, by the most assiduous and best contrived interrogatories. It would be wrong, in this place, to give a more detailed account of this lad. His progress has been well noted, and it may afterwards afford the subject of a separate communication.

Besides the memoir published by Mr. Wardrop, another relative to Mitchell has been drawn up by Mr. Stewart, and printed in the Transactions of the Royal Society of Edinburgh. Mr. Wardrop, Dr. Gordon, and other gentlemen, afforded him the materials for his interesting account.

The education of those who are deprived by nature of one or more of the most important channels of information, is not less interesting to the philosopher, than it is to those who are the objects of his care. Mr. Stewart has, with

laudable and humane feeling, dwelt at some length upon this subject, and has passed a high eulogium upon the merits of the plan said to be pursued by the Abbé Sicard. We cannot help feeling some degree of surprise, at the unqualified manner in which he has expressed his admiration of the deep philosophical principles which he thinks have guided the researches, and dictated the practical lessons of that author. From a natural desire to augment the value of his instructions, Sicard has probably been led, in his introduction, and other parts of his work, to give a picture of the minds of individuals who are born deaf, which unquestionably is not justified by common observation. It is contradicted by what we daily see of persons in that situation, who have not had the advantages of his system ; and we are enabled to state, from an accurate knowledge of the success attending less complicated plans of tuition, that many of his minute details and metaphysical distinctions, are both unnecessary and inapplicable. Mr. Stewart has implicitly adopted his account of Massieu. That account, there is reason to believe, is overcharged. Accomplished as this person undoubtedly is, it is proved, that he always showed an observing and penetrating mind, and an almost invincible desire to obtain instruction, long before he fell under Sicard's care. The following quotation shows that he was not so savage as we have been taught to believe :

" Massieu voyoit les autres enfans aller à l'ecole. Il avoit grande envie d'apprendre à lire et à ecrire. Il pria son père de l'envoyer chez le maitre, son père le refusa, en lui disant, par signes, que cela etoit inutile, à cause de sa surdité. Massieu lui faisoit signe de déboucher ses oreilles comme on débouche un bouteille ; voyant qu'il ne pouvoit rien obtenir de son père il dé robe un livre, et va de lui-meme à l'école. Le maitre l'en chasse impitoyablement. Massieu ressent une affliction profonde ; il pleure amerement ; il ouvre son livre ; il le devore des yeux ; il en parcourt les pages en remuant les levres, comme s'il eut prononcé les mots ; il veut les ecrire, et il ne trace que des caractères insignifcans. Il etoit alors agé de douze ans," &c. &c.

Vid. Considerations sur les Sourds-muet, de naissance, par U. R. T. Le Bouvyer Desmortiers, p. 255.

We hasten now, after these imperfect observations, to make known some of the facts connected with Mr. Wardrop's operation on Mitchell, and it consequences.

"In the hope of restoring this Boy's sight," he observes, "my attention was solely directed to the removal of the cataract of the right eye. Having thought it preferable *to extract* the lens of that eye, and conceiving this might be accomplished by having him properly secured, I placed him on a table in a room lighted from the roof: and having secured him with skilful assistants, I attempted to introduce the cornea knife; but the resistance which he made was such as to render it impracticable to use that instrument. He seemed to know that something was to be done to his eye, and he at first readily yielded, and allowed himself to be placed and held on the table. The uneasiness, however, with the pressure necessary to keep the eye ball steady and the eye-lids open, seemed to overcome his resolution, and his exertions became so violent that it was quite impossible to secure even his head.

"A second attempt was made the day following, having previously taken more precautions in order to secure him; but so violent were his exertions and cries, and so irascible did he become that all present were glad to relinquish their posts, and I was impressed with the conviction, that nothing but a powerful piece of machinery, calculated to grasp every joint of his body, would be at all sufficient to enable any operation to be performed. Some days having elapsed without the hope of being able to get the operation performed, I at last thought of a machine which completely answered the wished-for purpose, and which I may describe, as on a future occasion, under similar circumstances, it may be found useful. It consisted of a kind of box, long enough to contain all his body except the head. The sides were fixed on hinges, so that they might be folded in upon the body; it had no top part, and the bottom was long enough to reach sufficiently far beyond the sides at one ex-

tremity, so that a perpendicular plane of wood was fixed on it, in which there was a niche of such a size as accurately to contain the head. The machine being placed erect, and lined with a blanket, to prevent any risk of his being injured, he was easily secured in it by folding the sides on his body, and fixing them with circular ropes; and in this manner, notwithstanding a most powerful resistance and many harassing screams, he was placed on a table and kept quite steady. I had now given up all hopes of extracting the cataract, and determined to try *couching*, an operation which, though not generally so successful, was preferable in this case, as there was not so much danger of doing any essential injury to the eye, even if it did not succeed. Much difficulty was found in holding open the eye-lids, and keeping the globe of the eye steady; but this was ultimately accomplished by Mr. Ware, who was kind enough on this occasion to lend me his able assistance. As soon as the couching-needle touched the eye he remained quite steady, and his dreadful screaming ceased. I made use of the needle recommended by Mr. Cheselden, and with its sharp edge cut through the anterior portion of the crystalline capsule, and with its point, dragged the lens from the sphere of the pupil. On depressing the point of the needle the lens remained out of view, except a small portion of its inferior edge, so that I then withdrew the instrument. A small quantity of blood was effused in the anterior chamber. The operation being finished, he was liberated from the machine in which he was fixed. He then expressed great satisfaction, gazed around him, and appeared as if he could distinguish objects. This, however, could not be ascertained in a manner quite satisfactory, as it would have been prejudicial to his recovery to make any experiments; but it might be perceived from the change in the expression of his countenance. The eye, accordingly, being bound up, he was carried home, and put to bed in a dark room; after which he was bled in the arm."

On the *fifth day* he got out of bed, and was brought in to a room having an equal and moderate light. Before either

touching or *seeming* to smell me he recognized me, which he expressed by the fear of something to be done to his eyes. He went about the room readily, and the appearance of his countenance was much altered, having acquired that look which indicated the enjoyment of vision. Indeed, before the operation he always walked with much freedom, and I had observed, that even on a very rugged and unequal road he did not stumble, or suffer in the least from jolting.

"He appeared well acquainted with the furniture of the room, having lived in it several days previous to the operation; and though, from placing things before him, he evidently distinguished and attempted to touch them, judging of their distances with tolerable accuracy, yet he seemed to trust little to the information given by the eye, and always turned away his head, while he carefully examined, by his sense of Touch, the whole surfaces of the bodies presented to him.

"On the *sixth day* he appeared stronger, amused himself a good deal looking out at the window, and seemed to observe the carts and carriages which were passing in the street. On putting a shilling on the middle of a table he instantly touched it.

"On the *seventh day* the inflammation was nearly gone, and he observed a piece of white paper, of the size of half a six-pence, put upon the table. I took him into the street, and he appeared much interested in the busy scene around him, though at times he seemed frightened. A post, supporting a scaffold, at the distance of two or three yards, chiefly attracted his notice, and he timorously approached it, groping, and stretching out his hand cautiously, until he touched it.

"He was at this time removed from his lodging to an uncle's house, who being a tailor, had a room full of various coloured cloths, which afforded young Mitchell an unceasing source of pleasure and amusement.

"He expressed a great desire for a suit of new clothes, and it was signified to him, that his wishes would be complied with; and being allowed to make a choice, he selected

from among the variety of colours a light yellow for his breeches, and a green colour for his coat and waistcoat. Accordingly these were made, and, as I solicited his father not to allow them to be put on until I was present, it was signified to him that he should have permission to wear them in two days. The mode by which he received this communication was by closing his eye-lids, and bending down his head twice, thereby expressing that he must first have two sleeps. One day after the clothes were finished, I called, and requested that he should be dressed in them. This was intimated to him by his uncle, touching his coat, and giving him a ring of keys, one of which opened the door of the room where the clothes were kept. He gladly grasped the keys, and in an instant pitched on the one he wanted, opened the door, and brought a bundle, containing his new suit, into the room where his father, uncle, sister, another gentleman and myself were sitting. With a joyful smile he loosened the bundle, and took out of the coat-pocket a pair of new white stockings, a pair of yellow gloves, and a pair of new shoes. The succeeding scene was, perhaps, one of the most extraordinary displays of sensual gratification which can well be conceived. He began by first trying his new shoes, after throwing away the old ones with great scorn, and then with a smiling countenance went to his father and to his sister, holding up to each of them and to me his feet in succession, that we might admire his treasure.

" He next put on the yellow gloves, and in like manner shewing them to his father and sister, they expressed their admiration by patting him on the head and shoulders. He afterwards sat down opposite to a window, stretched out on each knee an expanded hand, and seemed to contemplate the beauty of his gloves with a degree of gratification scarcely to be imagined. At one time I attempted to deceive him, by putting a yellow glove, very little soiled, in place of one of his new ones. But this he instantly detected *as a trick,* and smiled, throwing away the old glove and demanding his new one. This occupation lasted a con-

siderable time, after which he and his sister retired to another room, where he was dressed completely in his new suit. The expression of his countenance, on returning into the room in his gaudy uniform, excited universal laughter, and every means were taken to flatter his vanity and increase his delight!

" Though the garments continued to occasion much delight, yet there were additional sources of enjoyment now laid open to him from his newly acquired powers of vision. One day I gave him a pair of green glasses to wear, in order to lessen the influence of the bright sunshine on his eye, which remained still irritable. He looked through them at a number of objects in succession, and so great was his surprise, and so excessive was his pleasure, that he burst into a loud fit of laughter. He continued to keep possession of the glasses, wearing which became one of his favorite amusements.

He, in general, seemed much pleased with objects which were of a *white*, and still more particularly those of a *red* colour. I observed him one day take from his pocket a piece of red sealing-wax, which he appeared to have preserved for the beauty of its colour. A white waistcoat or white stockings pleased him exceedingly, and he always gave a marked preference to yellow gloves."

The following account was transmitted by his father from Scotland, in 1810, to Mr. Wardrop.

" James seemed much amused with the shipping in the river, and until we passed Yarmouth Roads. During the rest of the passage, we were so far out at sea that there was little to attract his notice, except the objects around him on deck. He appeared to feel no anxiety till we reached this coast, and observed land and a boat coming along-side of the vessel to carry some of the passengers on shore. He seemed then to express both anxiety and joy, and we had no sooner got into the river which led to the landing-place, than he observed, from the side of the boat, the sandy bottom, and was desirous to get out. When we got to land he appeared happy, and felt impatient to proceed home-

wards. On our arrival that evening, after a journey of seventeen or eighteen miles, he expressed great pleasure on meeting with his mother and the rest of the family. He made signs that his eye had been *operated* upon, that he also *saw* with it, and at the same time signified that he was fixed in a particular posture, alluding to the machine in which he had been secured during the operation. He has now learnt to feed himself, and to put on his own clothes. No particular object has yet attracted his attention in the way of amusement."

"A considerable time elapsed before any further accounts of young Mitchell reached me. I then learnt that his sight, instead of improving, as I had been led to hope, was impaired, from the opake crystalline lens not having been absorbed, and again covering the pupil; an accident by no means unusual after *couching* the cataract.

"Since that time, however, I have been informed that his sight has begun to improve, the fragments of the lens, and opake portion of its capsule are undergoing a gradual absorption, and enabling him to distinguish objects which are not very minute, and of a bright colour. From this sense, therefore, he is not enabled to acquire much additional information, and it still seems only to afford him the enjoyment of feasting his eyes with light, and with various colours.

"As he has advanced in life, his temper has become more irascible, he is less tractable; and he has all the signs of puberty. No circumstance in his history seems to show that he has any notion of difference in sex.

"The picture which I have attempted to delineate of this Boy's lamentable situation, whilst it must excite our sympathy, cannot fail at the same time to give rise to much philosophical speculation on one of the most interesting subjects which can engage the human understanding. It is a most wonderful and instructive experiment, instituted by *Nature* herself to illustrate the progress of human intellect, to mark the influence of the different organs of perception in the developement of its various faculties; thereby real-

izing what many philosophers have contemplated in imagination, but never before witnessed.

"The Boy is now in Scotland, and Professor Dugald Stewart, to whom I have communicated every circumstance of his case, is taking a lively interest in procuring some suitable provision, which might enable the Boy to be placed where an attempt could be made to educate him, and perhaps also to improve his sight by another operation. If this plan be executed under the immediate care and management of Mr. Stewart, every thing will be done which can promote the happiness of this interesting youth, whilst science will reap the benefit of the observations of one of the most ingenious and most profound philosophers of the present day."

We most sincerely hope that, Mr. Wardrop's benevolent wishes may be fully accomplished. The success of the first operation fully warrants the trial of another, and the age of the lad requires that it should be made without delay.

The copious extracts which we have made from Mr. Wardrop's memoir, will enable our readers easily to appreciate its merits. It is composed in that simple unostentatious style which best suits subjects of this description; and, although he has purposely avoided all speculations, he has given a detail of facts which may be implicitly relied on, as affording a sure foundation for illustrating an interesting portion of the philosophy of our species.

III.

Elements of Surgery: for the use of Students; with plates. By JOHN SYNG DORSEY, *M. D. &c. &c. in two volumes. Philadelphia*, 1813.

Critics have generally considered systematic works as fair game. They are easily *cut up*, for every page must present something either trite or opposite to their own controversial opinions. They also favor much the laziness of students and mere practitioners, and thus are further exposed to sarcasm. Now we differ in toto from such of our brethren. We believe that the laziness which takes advantage of such helps would take advantage of none other; that they who are not stimulated by their own minds to enter into deeper researches, will not be *forced* into them. Most of the practitioners of all countries are men of very superficial reading; and so have they probably been in all ages: we are therefore warranted in attributing this imperfection to something inherent in human nature. Such men, if they had no systems to read, would read little or nothing.

For students a system is peculiarly necessary. Those who are educated in town have a thousand things to attend to besides study, and those who live in the country have a deal of riding to accomplish; they all, therefore, must economise their thoughts, and get a system by rote instead of travelling over the thorny paths of study to digest one for themselves.

The works we allude to are of two kinds; systems properly so called, and those denominated elements or first lines. The former give a compendious view of the whole science, omitting unnecessary details, and are chiefly of use to general readers; the latter contain only the rudiments, and

are proper, nay necessary, to initiate beginners into the studies they are about to prosecute. A good system is one of the greatest desiderata in surgery. By a good system, we mean one which shall give a concise sketch of former opinions, with a full view of the doctrine and practice of the present day. The particular sentiments of the author should connect all these into one system. Anatomy particularly, and other branches of science so far as they throw light on the several subjects, should be comprehended. And although most of the materials of such a work will of course be borrowed, yet the language and style should be the author's own, full and perspicuous for the purpose of instruction, and polished lest it disgust the more critical reader. We have adopted a very high standard, and our readers will not be surprised when we assert that we have never seen a good system of surgery. That of Mr. B. Bell, was once the best, unpolished as it was in language, and although nearly out of date, will afford the best ground work for a new one.

"Elements" is a more unassuming title, its only object being to furnish students with the first principles of their subject. These rudiments are, in surgery, parts of the science; some of them properly speaking fundamental, but many selected according to the judgment of the compiler. For instance, a knowledge of inflammation and its consequences is strictly fundamental, for the adhesion of wounds, the union of fractures, and (according to some) the formation, and growth of tumors, depend on inflammatory action; such a subject is of course part of an "elements." When, however, fractures and tumors are treated of, there is no rule to determine how much of their surgical history, or how complete a detail of theory or practice, should be comprehended. It is impossible, therefore, to form a standard of requisites for such a work.

We cannot say that the distinction we have made above, is to be found in all compendious works. Every imperfect system may in one sense be called elements, and thus be shielded from criticism. And it is not probable that the writer of an "elements" will so restrain his pen as to omit

opportunities of detail on favorite topics. Yet the division is a natural one, and we see no reason why such works should not be as distinct as are memoirs and biography, &c.

As no general requisites are made in elementary books, little general criticism can arise. We shall therefore in reviewing Dr. Dorsey's volumes, confine ourselves chiefly to the individual subjects. There is, however, one general hint, which we are unwilling to withhold.

Dr. D. in stating the opinions of other authors, has preferred giving them in their own words, considering it as the "most useful and honest method of communicating information." We beg leave to differ. If the passages quoted be not from some compendium, they will seldom be in the concise language proper for such a work. Besides, it is to be required that an author give every advantage to his subject which language can afford. If this be not done, it is a saving of his talents, which is inadmissible in any author, not "indifferent to that species of reputation which might accrue from such a publication."

We stop at the first chapter, to express our acquiescence in the Hunterian opinion, that a thin layer of blood is the medium of union by the first intention. Some of our readers may not be aware that there is a more recent doctrine; that lymph is considered as the medium, and that therefore the surfaces must be cleansed from every particle of blood. If a bloody stain is found on the dressings after such an union, it is proof sufficient that there was blood between the lips of the wound; and it is begging the question to say, that this blood has been absorbed and lymph then poured out; for lymph also is absorbed and the same argument would apply to every successive deposition until the union be complete.

We had somehow heard that the chapters on inflammation were very defective; and we find them just as defective as we could wish, and very well calculated for a work merely elementary. They are wanting in theory—in practical remarks they are sufficiently full. In one or two opinions we differ from the author.

We doubt if erysipelas be merely an inflammation of the cutis vera, or blisters should invariably produce erysipelas, instead of effecting its cure; and from this analogy, we venture to hint that some greater distinction of inflammation is necessary, than "healthy and diseased." Inflammation is one process or train of processes, erysipelas is another and very different; or to use more technical language, inflammation is one species of morbid action, erysipelas another species. This matter, however, is not to be settled by mere argument.

We quote the following only to give wider circulation to the greatest improvement which America has contributed to practical surgery.

"I shall conclude this account of the local treatment of mortification consequent to inflammation, by recommending in every instance the application of a blister, large enough to cover all the sound parts in contact with the diseased. This remedy was introduced into practice by Dr. Physick, who was led to apply it from the success of blisters in cases of erysipelas. He first employed it in January 1803, and from that time until the present, has had the greatest reason to be pleased with its effects, a great number of cases have occurred in various parts of the United States, in which an immediate cessation of the progress of the gangréne has been the result of its application." "After the first dressing of the blister, it will generally be found that the mortification has ceased to progress, and in a very short time the separation of the sloughs commences." p. 21.

Blisters are also recommended in erysipelas, in carbuncle, in spontaneous mortification of the toes, in mortification from exposure to cold, in inflammation of the orifice after venesection, and in several other cases.

At page 40, Dr. Dorsey contends that an artery partially divided may heal and remain pervious. This is in direct opposition to received opinion, but from the proofs which may be adduced, we can no longer deny the fact. Dr. D. has quoted three cases of such healing of the artery, one from Petit, one from Scarpa, and one from Dr. Physick's

practice: we can refer him to a fourth, that related by Mr. Lambert of Newcastle upon Tyne, in the Medical Obs. and Inq. vol. 2. p. 360. All these were wounds of the brachial artery. In the two latter cases no dissection was made, they are therefore imperfect proofs of the fact. In Petit's case the opening of the artery was circular, very small, and covered with a little clot or couvercle. Scarpa dissected his artery, and found it cicatrised and pervious, there having been a mere slit. The other two cases derive from these all the probability which collateral evidence can afford. Our author also states that he has seen several wounds of arteries, the edges of which did not take on the circular form ordinarily attributed to them, but lay "nearly or closely in contact." We presume Mr J. Bell alludes to a similar occurrence when he says "that an artery wounded with a small and slit-like wound, though fairly wounded will not bleed." (Bell on Wounds, part I. p. 147.) May we not, in this fact, perceive the circumstances which favor an union of the artery without obliteration? When the aperture becomes circular, the area is probably too great to be united, but by the highest grade of inflammation at which union by the first intention can take place, such a grade as may induce adhesion of the whole circumference of the artery: occasionally Mr. Petit's couvercle may be formed. But if the edges of the wound lie in contact, we see no reason why they may not unite as the edges of another wound. Even if aneurism be subsequently produced,(as Scarpa maintains will ordinarily occur) it is but the dilatation of the newly formed medium.

In Scarpa's case, the "cicatrix, if it may be called so, differed from the cicatrix of the simple wounds of other soft parts in this, that it was cemented, to use the expression, by an earthy substance; and that in this respect it had a greater analogy with the callus of bones after a fracture than with the re-union of the wounds of soft parts." The patient was 76 years of age.

In the chapter on wounds of the throat, the following method is proposed if the carotid artery be divided, and

the surgeon arrive at the instant, before the patient bleed to death.

"In such a case I can see no impropriety in passing a sharp armed needle round the carotid without attending to nerves or any thing else. This ligature being given to an assistant, a second should be instantly passed in the same manner round the upper orifice. The hemorrhagy would now be restrained until the wounded vessel could be drawn out separately with a tenaculum or forceps, and both its cut extremities tied; after which the first ligatures which had been used as tourniquets should be removed." p. 67.

We were startled not a little on reading this paragraph, for we had never learnt that a ligature on the internal jugular could be applied with impunity. The patient may, indeed, die from arterial hemorrhage, but that will probably be quite as comfortable both to him and his surgeon, as death from venous rupture, or at least congestion, in the brain. Perhaps, however, Dr. D. is aware of this practice being warranted by experiment, or else how could he say that he saw in it "no impropriety?" We should prefer compressing the divided end of the artery with the finger until the carotid could be separated and tied, or were secured at some point below the wound. Or, if this were impossible, we should rather keep up pressure till the cut end of the artery was obliterated. We have made this remark in utter ignorance that the internal jugular vein has ever been tied.

Dr. Dorsey, at p. 96, asserts that "the cartilages of a joint, never either inflame, suppurate, or ulcerate." This assertion is rather dogmatical—an error into which our author has sometimes plunged very deeply. We shall meet it by authority rather than argument.

Mr. S. Cooper says, (p. 17) "parts, partaking of a cartilaginous structure, being very incapable of bearing the irritation of disease, often ulcerate, or in other words, are absorbed, &c." Mr. Brodie, (see Medico. Chirurg. Trans. vol. 4. 235.) speaking of articular cartilages, remarks, "inflammation is not in them a frequent occurrence; when it does take place, it terminates in ulceration, &c." And on the

next page, "there are cases, and those not of rare occurrence, in which ulceration of the articular cartilages exists as a primary disease."

At page 116, we find another improvement by Dr. Physick, in the treatment of artificial joints. Instead of sawing off the ends of the un-united bone, he passes a seton through the interstice between them. In one case it was completely successful; in two others, in which "it was found impossible to place the fractured extremities *nearly* together," it failed.

Those who have studied only English books, will find great novelty in the treatment of fractures. Dr. Dorsey is a decided advocate for the plan adopted by Dessault, in these injuries, and his own experience has led him to prefer this to the entire exclusion of Mr. Pott's method; indeed he must have viewed English practice with a "jaundiced eye" or he would scarcely assert that one might see in the hospitals of "London, a fractured thigh rudely bound in bundles of straw." What we there saw of the treatment of broken bones was very different; bolsters of carded wool, were interposed between the splint and limb.

The old practice in these accidents was very imperfect. After reduction, a roller was passed tightly round the part, and short splints bound over it. If the patient could fix himself in an easy posture, so much the better for him, and so much the more easily did the surgeon obtain reputation. Mr. Pott systematized this practice. He ordered long splints, which relieved the bruised part from the pressure formerly made on them. He studied the easiest posture for the limb, that in which the muscles chiefly concerned, were most relaxed. And under these directions, have the English surgeons acted since his time, to the great advantage of their patients, and to the almost complete prevention of crooked limbs. "In France," says Dessault, "experience has been by no means favorable, to the position recommended by Pott." As was not unnatural, a position the very reverse was adopted. The patient was laid on his back and by means of complicated machinery, the

limb was kept on the stretch. And the success of this plan is established; by "the experience of the surgeons in the Pennsylvania hospital, and French hospitals."

One inexperienced in medical paradoxes would suppose that such opposite methods could never be both successful. They are, however, both founded on correct principles. When the limb is left in an easy posture, a less force will keep the ends of the fractured bone in apposition, and if the patient remain quiet no deformity will ensue. Such, however, is the accommodating nature of the muscular fibre, that it will bear a *steady* extension almost as well as partial relaxation; and under such extension the surgeon may adjust its position more nicely. The object of both plans is, so to oppose the fractured surfaces that they may be secured in the natural direction when callus is poured out upon them; and if this end be attained, the means of attaining it may be such as shall most conduce to the ease of the patient.

Arguing from these principles we should offer the following rule of practice. When the fracture is at the middle of a bone and the patient of years sufficiently mature to rest quietly in one posture, Mr. Pott's method is so far preferable as it is least complex, and least burdensome to the patient, particularly in hot weather. If such a fracture occur in a child, or in a person of very irritable habit, or if the fracture be near either extremity of the bone, Dessault's plan, or that of Dr. Physick, will be necessary. But we consider it as one objection to the latter, that it raises the arm so unnaturally. (see plate.)

There is one other point of comparison which should not be forgot. Dessault's apparatus ought to be adjusted by none but a skilful hand. It is wholly a process of art, and the smallest error in its application will be perceptible in the result. Mr. Pott's method leaves a little to nature, or rather it removes the only obstacle which nature opposes, muscular action; it is less dependent on the perfect skill of the surgeon. We fear, indeed, that this objection to the for-

mer plan will prevent its general adoption even in the cases to which it is most applicable. Surgeons in large towns, to whom experience has lent a full share of skill, may use it, but its application must be very awkwardly attempted by the inexperienced.

The apparatus above-mentioned, is used chiefly in fractures of the thigh-bone. For oblique fractures of the leg, other splints operating on the same principle were invented by the late Dr. Hutchinson. We judge them to be applicable under the same circumstances as those of Dessault for the thigh, but we prefer Mr. Pott's method in the majority of cases.

Dr. Post, of this city is, we believe, in the habit of deferring the application of splints until the inflammation, consequent to the accident, is moderated. The fracture being reduced, he lays the limb in a flexed position on a pillow, in which it is secured by several tapes. On the third or fourth day it is further adjusted and splints applied. This practice is, doubtless, the means of saving the patient a great deal of pain.

The chapters on dislocation have suggested to us no other observation than that they contain very judicious directions for reduction,—most of them from Boyer, but some of them improved by Dr. Physick and our author. It is asserted at p. 198, that bleeding "ad deliquium animi," for aiding reduction, was first *practised* by Dr. P.: the date of this first trial should have been given. At the same page we find a case of dislocation of the shoulder-joint of five or six months standing, which was reduced by Dr. M'Kenzie of Baltimore. Blood-letting was employed to facilitate the operation, and nearly "*five pounds of blood* were drawn before fainting could be induced."

Our author has paid particular attention to this branch of surgery, as is evident from his remarks on the proper counter-extension in dislocations of the shoulder-joint. He adapts his apparatus so as to secure the acromion as firmly as possible, and that being fixed no other means of counter-extension will be requisite.

"The great object to be kept in view, is to act as effectually as possible on the shoulder-joint, and this can be best done by making the counter-extension as nearly as possible to the glenoid cavity, and this can certainly be accomplished by making counter-extension *exclusively* upon the acromion process." p. 220.

Concussion of the brain has been a very perplexing subject for surgeons, and they seem to have arrived at no very distinct conclusion as to its proximate cause. Dr. Dorsey is of opinion that it is a real *contusion* of the brain, attended with rupture of numerous small blood-vessels, and effusion of blood. This may happen in many cases, but we are not prepared to yield to the *dogma* "that in all cases of violent concussion this bruised state or ecchymosis does exist." One such dissection at least we have seen, in which there was no ecchymosis visible, but a laceration of the substance of the cerebrum. We know also that it is the opinion of Mr. A. Cooper (from several dissections) that laceration is the cause of high inflammation, and death in violent cases. Indeed we are not to expect an uniform condition of the brain, more than of any other part, after a blow. Contusion in every degree of violence, ecchymosis, and laceration follow such accidents in the integuments, and they ought certainly to be looked for after violence done to the brain.

We were much pleased with the moderation of our author in directing the application of the trephine. He has none of that enthusiastic affection for this instrument, which a few of the present day have caught from Mr. Pott. The argument that a fissure of the cranium will excite inflammation and suppuration of the meninges, is certainly more applicable to the sawing of the bone, and tearing of it from the dura-mater. This consequence of trephining is, indeed, its chief objection, and should deter us from operating, except when symptoms very decidedly indicate it. Liberal depletions, and extensive blistering have in many cases done all that could have been expected from the operation ;—or rather, there are circumstances (at present unknown to us)

under which the brain will sustain a pressure of which we could, from reasoning, have no conception. Such was, doubtless, the following case :

"I once saw a woman who had been assaulted by a lunatic, and struck forcibly with an iron bar : I found her skull fractured near the junction of the parietal bones, a depression existed which in one part was full half an inch below the natural level, and yet none of the usual symptoms of compressed brain occurred, &c. p. 270.

In Dr. Post's museum, there is a skull fractured and depressed on the side; the depression is four or five inches long, three broad, and nearly three-quarters of an inch lower than the level of the surrounding bone. Some callus is seen at the fractured edges. The man recovered from the accident, and died some months after of dysentery.

We find no notice of the fracture of the basis of the cranium occasioned by a fall on the head. In such a case, the whole weight of the body is concentrated in the vertebral column, which forces in the condyles of the os occipitis, and the fracture is more or less extensive according to the violence of the blow. This is to be suspected when there are symptoms of compression, without any injury of the upper part of the head ; and if the fracture cross the petrous portion of the temporal bone, there will be bleeding from the ear. For this accident the only means in our power are depletions and blistering.

In our last number, (p. 34.) our readers will find an account of an operation for the relief of inversion of the upper eye-lid, the invention of Mr. Saunders. It has, in several cases, happened that the same discovery or invention has been made on both sides of the Atlantic at nearly the same time, and without any correspondence of the inventors. Such was the case in the present instance. Dr. Dorsey performed this operation 1810, and Mr. Saunders' book was not published until 1811. Our author states his claim in a style altogether manly and decorous : such of our readers as are conversant with books, will often find such claims in very different language.

Our readers are probably aware that in the controversy respecting the best operation for cataract, surgeons have generally preferred depression, and oculists extraction. Dr. Dorsey is an exception to this rule, he prefers extraction. This is, doubtless, one of those medical disputes which have occasioned wider difference than the subject would warrant; and if practical men would lay aside their predeterminations, they might select the several operations as each case indicated. We cannot agree with our author, that extraction "is, in fact, an operation requiring very little dexterity or science." The mere practice of it may not require science; but, that it cannot be performed until great dexterity is *acquired*, we may learn from Wenzel's confession, that he had spoiled "a hat-full of eyes" before he learned how to extract. We recollect the following advice of an eminent lecturer in London; not a professed oculist indeed, but acquainted with all the secrets of the profession. "If," says he, "you calculate upon being settled as an oculist, prefer extraction, for oculists who have become skilful, find in it the most certain success: but if operations on the eye be only a branch of your practice, depression will be the safest."

We quote the following direction, in cases of foreign bodies lodged in the œsophagus, on account of its practical importance.

"In two instances I have known the spasm which had arrested a foreign substance, speedily relaxed by a solution of emetic tartar. In each of these cases, a large peach-stone had slipped into the œsophagus, and the patients were of course unable to swallow, and could not breathe without great difficulty. They were directed to hold in their mouths a solution of emetic tartar, and attempt to swallow it. Nausea came on, and the spasm relaxing, the peach-stones were readily discharged." p. 366.

There is a chapter on accidents and diseases of the ear, which, though rather concise, comprehends most of the affections of this organ. In this department surgery has done but little;—whether more may be expected we shall

not venture to decide: we hope, however, that the proposal of Mr. A. Cooper for remedying a particular sort of deafness is an earnest of some greater discovery. Mr. C. found that the stoppage of the Eustachian tube sometimes gave rise to this imperfection. And trusting to the philosophical hypothesis, that one use of this tube was to afford a communication between the external air and that within the tympanum (like the hole in the side of a drum), he suggested that an opening might be made in the membrane of the tympanum, which should serve the same purpose. This first experiment was successful, and some of his future ones; that all should not succeed might be expected from the difficulty of ascertaining whether obstruction in the Eustachian tube were the only disease. Seldom have two sciences thrown greater light upon each other than acoustics and surgery in the present instance. Morbid anatomy may suggest still greater improvements.

The second volume begins with several chapters on hernia. In these Dr. D's plan of quoting is most conspicuous. We are aware that the modern surgery of this subject, is contained almost wholly in two or three English authors, and that their discoveries and opinions must at present be the bases of all systems; but we should have been more gratified to see them expressed in new language. A compiler who thoroughly comprehends his subject, seldom fails to throw some new light on the matters of which he treats. We regret this failing in Dr. D. the more, because what he has written is in general very judicious.

So various, in different cases, is the period to which the operation may be deferred, that almost every surgeon will feel diffident in deciding how long he may continue to use medicinal remedies. And this point is probably the least understood of any in the treatment of strangulated hernia. When, on opening the sac, the intestine is found mortified, the operation has undoubtedly been too long delayed; and yet, such has been the occasional success of applications and remedies long persisted in, that one feels scarcely justified in operating till all hope of such success has vanished. The

division of strangulation into two sorts seems best calculated to clear up this difficulty; and by noticing carefully the degrees of violence of the symptoms, and dividing our practice into two distinct plans (early and late operations) much embarrassment will be removed. The following paragraphs, partly from Mr. Lawrence's book, and partly our author's own remarks, very well illustrate the above idea.

"The strangulation in some instances comes on immediately. I have known a patient straining at stool suddenly force down an additional portion of intestine into an old hernial sac; and immediate strangulation was the consequence. In such cases "the symptoms, Mr. Lawrence remarks, come on suddenly, and their progress is rapid: the swelling is tense and highly painful, particularly at the ring, where the slightest pressure is intolerable; the abdomen quickly becomes painful and is tense and elastic to the feel. The constitutional affection partakes of the inflammatory character. So quickly does the complaint run through its stages in this case that gangrene has been known to occur in twenty-four hours from the expulsion of the intestine."

"In other cases the strangulation is slow and progressive. In some of these cases many days elapse before it is complete. In such cases successful operations have been performed a fortnight, and even three weeks after the commencement of incarceration. This slow strangulation generally happens in large old herniæ which have been often protruded and replaced, or which have been long unreduced. There is generally an unusual heaviness and hardness of the tumor in such cases, owing to an increased quantity of the intestine." p. 15, 16.

We have sometimes thought that opium was not sufficiently tried with the other usual remedies. We see no reason why it should not be administered first of all, as it cannot interfere with any other means, and will then have full time to produce its effect. This effect is doubtless lessening the sensibility of the strictured intestine, and of the power which causes the stricture if it be spasmodic; it has often been successful. The effects of cold applica-

tions are, we suspect, very analogous,—they diminish irritability and sensibility in the parts over which they are applied. The idea that they are effectual by the diminution in bulk they may occasion, is certainly very crude.

These chapters would have been much more complete, if the anatomy of hernia had been inserted. The correct and elegant dissections which have been made by Camper, Cooper, and others, may be considered as the most valuable addition made to surgical anatomy during the present age. But we have seen some of Mr. Cooper's followers carry the doctrine of the fasciæ much farther than Mr. C. himself; they insist that in every operation the different layers may be made out. We may refer to p. 79 and 80 for circumstances in which Mr. C. thinks the fasciæ will not be observed. Mr. T. Blizard thinks it imprudent to *depend* on finding them. Those however who *will* find these fasciæ, may *make* them with little difficulty. Let it not be supposed that we undervalue a perfect knowledge of these membranous expansions, they are most generally observable, and even when they may not be, the more perfect the knowledge of them, the greater will be the confidence in operating.

Our author is an advocate for dividing the stricture, and returning the contents without opening the sac; and argues in favor of this practice, from our not hesitating to return the intestine by the taxis if practicable. But we think this practice no improvement, and the argument is certainly fallacious. Why should we study the symptoms closely to find whether mortification be begun, and if it be, not return the intestine, and yet when we are on the sac reject the only means of ascertaining this point with certainty? Of the bad effects of air we profess to be very sceptical; but we shall not discuss this point here, as we do not find that our author has made these bad effects an objection to opening the sac.

The application of a ligature for the cure of umbilical hernia is sanctioned by the success which Dessault had in the use of it. He reduced the hernia and applied a liga-

ture round the sac at its base or neck. Dr. Physick has proposed to dissect the skin from the sac and its fascia, and thus apply the ligature without including the skin, which is doubtless a preferable method, and has been successfully adopted by Dr. Wistar. If tying the sac of an umbilical hernia will effect a cure, may we not tye the sack of an inguinal or femoral hernia? there is, indeed, no precedent to sanction it, yet such an experiment would be founded on very strict analogy.

Next follow several chapters on hydrocele, and diseases of the testicle:—after these a chapter on strictures. Our author is inclined to consider the urethra as a muscular canal. We profess not to decide this question; but we do not think that Dr. D. has refuted the reasoning of Mr. Bell. The urethra is beyond doubt an *elastic* canal; but, if it were muscular, would not the corpus spongiosum be superfluous? The use of this envelope is, doubtless, when the cells are turgid with blood, to contract the passage; and if muscular fibres surround it, they can only less perfectly produce the same effect. Elasticity is sufficient for passing the urine and will fully account for the forcing out a bougie, or the urine as in Dr. D's experiment.

From the manner in which our author notices the use of caustic alkali, as suggested by Mr. Whately and Mr. C. Bell, we suspect that he has overlooked the soothing effects of this remedy, and of lunar caustic also, under certain circumstances. This effect is sometimes produced by the destruction of an irritable surface, yet we cannot but attribute it in part to a specific virtue; and there seems to be some analogy between the effect of the soapy compound formed by the caustic and the mucus of the urethra, and that of soap given in jaundice while a gall-stone is passing.

The manner in which Dr. Physick operates for the cure of strictures, and in retention of urine, must be in his hands a valuable improvement; and so it will be in the hands of any surgeon of skill and experience: but it should not have been introduced into a systematic work without great-

er cautions than Dr. D. has suggested. We do not hesitate to say that it is totally unfit for general adoption ; at least in stricture ;—no operation for retention of urine should be attempted by ordinary surgeons.

The method of making bougies will be found very useful to such as desire more serviceable articles than are usually found in our shops. See p. 120.

In the chapter on stone in the bladder, there is great deficiency. Nothing is said of the supposed causes of stone; which, however uncertain, might be tested in this extensive country. There is nothing said of the composition of calculi, and but little concerning solvents ; which is the greater fault in Dr. D. as he professes to believe in the occasional efficacy of these remedies. As one decided instance of such efficacy, he relates the following case :

" I once dissected a gentleman of this city who had been sounded some years before he died, and a stone was evidently perceived ; the sound of the staff striking on the stone was audibly distinct. This gentleman's bladder contained no stone at the time of his decease." p. 148.

This is, probably, the most authentic case on record, of a cure by solvents :—but even this authority is not unimpeachable. Both Dessault and Cheselden operated on patients, who, from sounding, were judged to have stones, but whose bladders were so hardened as to produce the grating sensation, without any stone being contained in them. That such a state of the bladder had existed in Dr. D.'s case, cannot indeed be asserted ; it is probable, however, that disease of the bladder, more readily than stone, will yield to the medicines employed as solvents.

Our author is no friend to the innovations of some modern surgeons in the operation of lithotomy ; and his whole argument against scalpels and bistouries, is an anecdote of some surgeon in Paris who used one knife for cutting off a limb, cutting out an eye, and cutting for the stone. If it were Dr. D.'s object to mention the gorget only, this might be fair enough ; but, as a system-writer, it was his duty to say something reasonable either for or against the use of

various knives now used —particularly when we have as authority for employing them, the names of Cooper, T. Blizard, the two Bells, Burns, &c. We need not decide between these instruments; but we have no hesitation in saying that almost any of them must be preferable to an ordinary gorget. Dr. Physick's is undoubtedly the best; but it would, perhaps, have been more perfect, if his moveable blade had been on a Hawkins' gorget instead of Mr. Cline's. The blunt side of Hawkins' stretches the urethra so that the whole sharp edge may cut; half the edge of Mr. Cline's will be lost in distending this canal. Hence the broad edge of the latter, does not make a larger incision than the small edge of the former, and it endangers the pudendal artery in a much greater degree. A part of the opening in every operation, must also be made by stretching or tearing, for no knife or gorget, single-edged or double, can make an incision free enough for the extraction of a large stone. Perhaps, therefore, the following may be adopted as the correct principle in operating;—to divide the urethra, neck of the bladder, and prostate, and, for the rest of the opening, to depend on the mechanical dilatation which the extraction of the stone will effect: when the stone is *very* large, the opposite side of the urethra is to be cut. If this principle be correct, we need never divide the pudendal artery,—if this principle be correct, the straight bistoury of Mr. Blizard is the best instrument for performing lithotomy.

The next chapter which arrested our attention, is that on aneurism. We were not a little surprised to find our author an advocate for the old theory of dilatation of the coats of an artery. Most surgeons seem at present agreed, if dilatation ever occur, it does but rarely. Dr. Dorsey, however, totally dissents from the doctrine maintained by Scarpa, and thinks that absorption of the coats is similar to the absorption of surrounding parts,—both originating from the pressure of the aneurism. We shall comment freely on this chapter.

A quotation from Scarpa's preface is first given, to shew

that he was bold and not a little enthusiastic in his theory. But the quotation should have been somewhat larger. The sentence begins, "after a number of investigations instituted on the bodies of those who had died of internal or external aneurisms, I have ascertained," &c. and the paragraph following the quotation, begins thus.—"In instituting these researches on the dead bodies of aneurysmatic patients, I have employed the greatest possible care, especially in unfolding the proper coats of the injured artery;" &c. see preface, p. xi, xii. With these his dissections, he compared "the most celebrated descriptions and figures which we have of aneurism," and, from the whole investigation, he was induced to believe, that the rupture of the internal and muscular coats of an artery, in consequence of disease, always precedes the formation of the aneurismal tumor. We doubt whether any surgeon has had equal opportunity for observation; and we are anxious to know on what dissections Dr. D. grounds his "total dissent;" in "recording" which he seems to have as great boldness and enthusiasm as he condemns in Scarpa. Nor is Scarpa's opinion novel, as Dr. D. asserts; for Hildanus and Servetus maintained the same doctrine before. And as these, with several others, (p. 66, of Scarpa's translation,) had tested the opinion by anatomical investigation,* our author is again incorrect in alledging that it "is the result of his (Scarpa's) individual observations.

In the first paragraph of his chapter, our author has noticed a decisive experiment of Mr. J. Hunter and Sir Everard Home, "who dissected off the outer coats and adventitious support of an artery, and the internal coat alone being left, was found sufficient to continue the circulation without acquiring any increase of volume at the injured part." This is proof enough that as long as the internal coat is unimpaired in structure it will not dilate, and we are disposed to believe that this coat is less frequently impaired than is apprehended by Scarpa. We would refer Dr. D. to his own

* Barbette, after stating the doctrine explicitly, adds, "Anatome sententiam nostram confirmat."

preparation, to examine whether the internal coat be not perfect altho' adhering closely to the morbid structure, or else, whether there be not a little scale of "steatomatous, earthy, degeneration" either piercing this coat, or apparently lying upon it. We have a preparation of this sort, taken from a man who died of aneurism of the aorta. It is part of the aorta, on which is a cluster of these diseased spots, or rather one space of degenerated structure as large as a cent.

The internal coat, apparently sound, covers the whole of this space, except at a few points where it has given way (or nearly so) to the earthy degeneration. In this case, therefore, and we have seen several such, the internal coat is not impaired in structure. Nor is the muscular coat the seat of the earthy degeneration; ossification, we know, is a disease of the coat called muscular, but the two diseases are very different. The seat of aneurismal disease seems in this case, to be the fine cellular substance connecting the internal and muscular coats; or, if we are to consider this cellular substance as part of the internal coat, we must be understood to assert, that it is the internal very membrane which is unimpaired in our preparation. We feel somewhat diffident in offering this modification of Scarpa's doctrine, particularly as our proofs are so limited; but, as we feel no great enthusiasm in the matter, we shall not be abashed if our observations should not be confirmed by those of other surgeons. They agree, however, most perfectly with the doctrine in question. When the aneurismal degeneration takes place, as we have stated it, the internal coat is pressed upon by an unnatural substance, and is, of course, gradually absorbed; when the earthy point has penetrated, the blood will find a passage through the internal coat, it will separate some of the fibres of the muscular coat, and the cellular coat will gradually distend and form the sac, or rather, it will increase as any part of the body grows, by absorption and deposition. We trust that in this theory, there are no very "imperfect views of the physiology and pathology of the absorbent system."

But the matter does not depend on theory; Scarpa has

proved it by dissection. He traced the several coats, and found that the internal and muscular did not extend over the tumor; the aperture of the artery is often callous, and sometimes fringed, the latter producible in no other way than by irregular absorption or laceration, and the former denoting an unnatural surface.

Although we have criticised freely this theory of our author, we agree most perfectly with him in his practical ideas. Compression we are glad to find struck from the list of remedies; it is mentioned only incidentally, and in no wise commended. Compression is as unsurgical a practice as could well be devised; its average of success is infinitely beneath that of the operation. It cannot be expected to excite an adhesive process in any but a healthy artery, seldom even in this.—much less in a sac almost disorganized. Its success most probably depends on the vessel becoming stopped by a clot, and this has as frequently occurred where no compression has been used. It increases the pain, and generally the size of the aneurism, and lessens the chance of the fortunate issue of the operation. We cannot conceive a case in which it should be preferred, except when an artery has been just wounded; and it should be recollected that the vessel will not heal, and remain pervious, without danger of aneurism, but that the cure will depend on obliteration of the tube by the effusion of lymph from the wounded orifice.

In internal aneurisms, when no operation is practicable, we would unite most cordially with our author, in recommending Valsalva's method of treatment, low diet, approaching to total abstinence, and frequent venesections. Although this can scarcely be of itself a remedy, yet it will, by mitigating the disease, prolong life; and should a clot be fortunately driven into the vessel, the enfeebled circulation may sustain the shock, which in a vigorous condition might prove fatal. Mr. Pelletan, a French surgeon of great experience, has proved the efficacy of Valsalva's proposal more fully than any other we have heard of. We have not seen his "Clinique Chirurgicale," but find, from the London

Medical Review, that his success has been very encouraging. One patient submitted for only eight days to this rigorous treatment;—his aneurismal tumor (at the root of the aorta, and projecting between the ribs) greatly diminished; but he returned to "very drunken and irregular habits," and died with the tumor much enlarged. Another patient submitted to be bled profusely, and to a "most rigorous diet for a week or more," when the pain and pulsation of the tumor (also an aneurism of the aorta) ceased. His diet was gradually improved, and at the end of a month he was discharged cured; "he died two or three years after of another complaint." The same plan was tried with success on a patient who had an axillary aneurism, too large to be operated on.

The operations are next described, and several cases given. In describing that for popliteal aneurism, Dr. D. directs the external incision to be made rather *below* the middle of the thigh, and yet he says nothing of raising the sartorius, so that he must tie the artery considerably *above* the middle of the thigh. We looked for a list of errata, but not finding any, we have suggested this correction for the benefit of our younger readers.

We have extended our remarks to such a length that we are unwilling to say more on the contents of this volume. Such as remain are of less importance, although several of the articles might afford matter for criticism. Mr. Hey's manner of amputating on the foot is omitted; also Mr. A. Cooper's imprvoement in the treatment of spina bifida, which was re-published in this country before Dr. D.'s second voume. To us it appears that the subject of ulcers is made unnecessarily complex,—this, however, is perhaps mere matter of opinion. We waive any detail on these or other subjects; and we willingly bear our testimony to the general excellence of these volumes, in the hope that they are the earnest of a complete system, a work much wanted, and for which Dr. Dorsey has proved himself to be well qualified.

IV.

Treatise on the History, Nature, and Treatment of Chin-cough; including a variety of Cases and Dissections. To which is subjoined, an Inquiry into the relative Mortality of the principal Diseases of Children, and the numbers who have died under ten years of age, in Glasgow, during the last thirty years. By ROBERT WATT, M. D. *Member of the Faculty of Physicians and Surgeons of Glasgow, Member of the London Medical and Chirurgical Society, &c. and Lecturer on the Theory and on the Practice of Medicine in Glasgow.* 8vo. *pp.* 392. *Longman and Co.* 1813.

We have much pleasure in announcing to our readers the publication of this valuable work. The disease of which it treats is indeed familiar enough to our observation, but, like some others, it has not experienced that attention from practitioners, which its importance and fatality ought to have secured. Every family expects its visitation, and it has become a prevalent fashion to permit this malady to pursue its course with little interruption or assistance, unless such as is afforded by gossips, amulets, or domestic recipes. Is this abandonment of a most serious ailment to feeble, rash, and unauthorised hands, to be attributed to the inefficacy of medicine, or to the negligence and apathy of practitioners? We are disposed to inculpate the latter, and moreover to opine, that whenever the cure of a disease becomes intrusted to unprofessional hands, or that the medicines are supplied duly stamped, a newspaper advertisement, the sole guide and director, from a medicine warehouse, the source of such a sacrifice of understanding, must arise from the conduct of regular practitioners themselves. In the present instance, medical men have been forward to acknowledge that the disease depends upon a peculiar contagion, will run its

course in spite of medicine, and the practice they have pursued has too frequently consisted of uncertain, trifling, and unscientific remedies. Medicines the most opposite in quality and effect, have been given upon empirical principles, which it ill becomes such practitioners to adopt and apply, as are forever exclaiming against quackery, and denouncing its pernicious consequences.

Fatal as hooping cough appears to have been from the earliest records of its appearance, Dr. Watt has been able to discover very few works of consequence upon the subject. He could not trace it in the writings of the Grecian, Roman, or Arabian physicians; while in Britain, and most parts of Europe, no period can be assigned in which the disease did not exist; in London it increased rapidly during the last century; and in Sweden, according to Dr. Rosenstein's account, chiefly taken from the bills of mortality, 43,393 children died of it between the years 1749 and 1764. In the year 1755, 5832 children were carried off by this distemper; and in the years when it has raged with less fatality, about 1700 or 2000 are lost by it.* In Glasgow, the scene of the author's observations, it has continued very uniform for the last thirty years, but rather on the increase. In some years the number of deaths is greatly more than in others, but on the whole it has run pretty nearly about five, or from that to five and a half per cent. of the whole deaths in the city. The greatest number of deaths by chincough in Glasgow, during the last thirty years, was in 1809, when they amounted to 259, or something more than eleven and a half per cent. of the whole deaths in the year. It is somewhat singular, that in the last twenty-five years, there have been only six single months in which some have not died of chincough; and in the last twelve months, not a month has elapsed without a death. Next to the small-pox formerly, and the measles now, chincough is the most fatal disease to which children are liable.

The author considers the disease as highly infectious, and

* On the Diseases of Children, and their Remedies, p. 194.

arising from a specific contagion, the degree of which depends on the state of the atmosphere. There are very few instances recorded in which it is supposed to affect a person more than once. It chiefly occurs in infancy and childhood, though no age is exempt from it. From a table inserted, it appears that March is the most fatal month; and that fewer die in the months of July, August, and September, than in any other part of the year. It has also proved much more fatal in some years than in others.

The author thus describes the early symptoms:

"The chincough generally begins like a common cold, attended with more or less fever. The lips appear full, some degree of hoarseness and sneezing succeed, with a redness or turgescence of the face, and generally a watery irritating discharge from the eyes and nostrils. The patient has a greater disposition to sleep than usual, some difficulty of breathing or oppression about the chest, with a hard dry cough. The appetite is somewhat impaired, attended with a costive or irregular state of the bowels. The patient complains more than usual of cold, particularly in the back and extremities. After some days, the reverse of this takes place, he then complains of thirst, and a sense of heat over the whole body, the skin feeling harsh and dry.

"During the continuance of these symptoms there is occasional headach. The tongue is a little whiter and fouler than usual. The pulse is somewhat accelerated, and now and then irregular.

"This febrile state, which attends the commencement of chincough, resembles in many respects the fever which precedes the measles or the small-pox. In some cases it is so mild, and continues so short, as hardly to deserve notice; in others it is more severe and protracted.

"In the generality of cases, as the kinks begin to form, the catarrhal and febrile symptoms abate, and the patient in the intervals feels himself quite well; but in others the fever continues, the kinks are less regular, and in the intervals the patient is languid and oppressed. The tongue continues foul, and the appetite bad. The pulse in these

cases is weak, excessively quick, and often irregular. The skin assumes a livid colour, while the patient's flesh and strength decline rapidly. This is one of the worst forms of the disease, and is most apt to occur in the young and plethoric. It is often fatal, for the danger is not apparent, till it is too late for any remedy to be of service.

"It has been remarked, that the chincough generally begins like a common cold. In some instances it continues in this form throughout the whole course of the disease. 'I have had instances of a disease,' says Dr. Cullen, 'which though evidently arising from the chincough contagion, never put on any other form than that of a common catarrh.'* The same circumstance has occurred within my own observation; and Mr. Burns remarks, that 'in young children, even death may take place, although the disease never fully forms.'†

"*Description of the paroxysm.*—Commonly about the end of the second, or beginning of the third week, the symptoms undergo a very remarkable change. During the cough the expirations become extremely rapid and altogether involuntary. By the continuance of this process the air is suddenly expelled from the lungs, and the patient appears in danger of suffocation. At last he is relieved by a full and violent inspiration, generally accompanied by a stridulous noise, like the crowing of a cock, or the rapid passage of air through a narrow brazen tube. The convulsive expirations are again renewed, and the paroxysm, consisting of these two parts alternately, is continued till relief is obtained either by expectoration or vomiting. The matter rejected is generally a tough mucus, occasionally mixed with the contents of the stomach, and sometimes with particles of blood.

"This manner of terminating the paroxysm, however, happens only in the more favorable cases; in the more severe, the proxysm ends in the complete exhaustion of the patient, without any discharge whatever.

"The expirations during the kink resemble those of a

* First Lines of the Practice of Physic, Section 1406.
† Principles of Midwifery, &c. p. 541, 2d Edit.

common cold ; but are much more rapid and violent. The inspirations, in most cases, bear a very strong resemblance to those of well-formed Croup. It is from the peculiar sound produced by the last of these processes that the disease has been termed *Hooping* cough. The *Hoop*, however, is in many cases completely wanting, and the patient feels no obstruction to the taking in a full breath, 'I have said,' observes Dr. Butter, 'that the kinkcough is *generally* attended with a shrill inspiration ; because it sometimes occurs without that symptom. Such a defect constitutes a variety of the disease, which may properly be denominated the *imperfect Kinkcough*.'*

" It may, perhaps, be owing to this difference in the nature of the kinks, that in the Bills of Mortality for London, particularly about a century ago, some of the deaths are arranged under the head of chincough, and others under that of Hooping cough. Even in later periods, from the manner in which the two terms are introduced, one would naturally conclude that two distinct diseases were meant. Be that as it may, with regard to the circumstances of having or wanting the *Hoop*, I have remarked a very striking difference, which deserves to be noticed. In one set of patients we have the *Hoop* very long and distinct ; but in these the expirations are less rapid and violent. The patient seems to gasp and strain rather than cough. The face is dark-coloured, the eyes are turned up, and there is generally a tendency to fainting or strangulation. The patients affected in this way are generally the very young and the plethoric. In the other set of patients, the expirations are rapid; and so very violent, that, to use the common expression, they look as if they would burst. The face in such cases is of a bright scarlet colour, the eyes fiery, and as if they would start from their sockets ; but inspirations are performed as soon, and apparently with as much ease as if nothing were the matter. Cases of this kind occur in the older and more robust.

" These bursting kinks, as the disease advances, become

* Treatise on Kinkcough, p. 3.

less violent. The expirations produce a sort of barking noise, and the cough is less confined to regular paroxysms. Sometimes the expirations are of this kind from the beginning, and continue so throughout the whole course of the disease. Mr. Burns perhaps alludes to this form, when he compares the cough to 'the chattering of a monkey quickly repeated.'*

"Dr. Gregory, sen. has noticed a very curious variety of the disease, of which Dr. Kirkland gives the following account: 'Duos notavit casus celeberrimus noster Præceptor Gregorius, quibus non continuo tussiendi paroxysmo sonora inspiratio, sed loco inspirationis syncope superveniebat, et, aliquot horæ sexagesimis post syncopen interjectis, demum subsequebatur, solito more, inspiratio et alter tussiendi paroxysmus.'†

"When the kinks are of the Hooping kind, the face, as I have already remarked, becomes swollen, and of a dark purple colour, the veins of the head and neck are distended as if ready to burst, and the patient gasps, and has the appearance of sudden suffocation. If he remains long in this situation without making any noise, he is said to have taken a *dumb kink*. In those violent efforts the extremities become cold, a sweat breaks out on the forehead and temples, and even blood is frequently forced from the nose, mouth, ears, and eyes. In many cases the patient is actually suffocated, falls into a faint, or is seized with convulsions. When the inspirations are long and very difficult, the patient is said to have fallen into the *back draughts*. This symptom is generally regarded as little better than the *dumb kink*, both of them showing the disease to be of a very unfavorable nature.

"We have seen that in children the form of the kink is very different: in adults we meet with a similar variety; but the hoop seldom or never occurs. The bronchial system, at this period, is perhaps incapable of taking on that morbid state on which it depends. In two young women

* Principles of Midwifery, &c, 2d Edit. p. 541.
† Dissertatio Inauguralis de Pertussi, p. 3. 1772.

between twenty and thirty, the kinks were very severe and frequent. The face was flushed, and the whole body much agitated; but there was no apparent difficulty in the inspirations. In the lady's case, who had this disease along with her children, the kinks were of the same description, but accompanied with a most violent headach. These were the only adults I remember to have seen under the disease.

"Dr. Heberden remarks, that 'adults are, as it were, overpowered at once upon the access of the fit, so that they fall down instantly, as in an apoplexy, but they very soon come to themselves; this is a distinguishing symptom of the disease in those who are grown up.'*

"Dr. Butter gives the case of a woman of thirty, the mother of several children, and at the time in a state of pregnancy. He does not mention any affection of the head among the symptoms, but remarks, that 'sometimes the fit was so severe as to threaten suffocation. She sometimes expectorated a white thick phlegm, and then the fit was short. A severe fit was always attended with a clear ropy expectoration. She complained also of pain in her right side, which sometimes shot through to the other, and sometimes downward, so as to imitate labor pains.'† The disease was subdued in a short time by the use of hemlock and other remedies. The patient was afterwards delivered of a healthy child, and had a good recovery."

The fits vary much in frequency and severity, and recur at irregular intervals. The appetite is various, at times voracious, at others impaired. The author considers a great desire for drink a bad sign, and deems a free indulgence hurtful. He thinks "a tea-spoonful or two will quench the thirst as well as a full draught, while it weakens and oppresses the stomach much less." In this particular we cannot unite with him in opinion, having never witnessed any unfavorable circumstance from allowing a child a moderate

* Commentaries on the History and Cure of Diseases, p. 434.

† Treatise on the Kinkcough, p. 61.

portion of any aqueous beverage. Dr. Watt had previously remarked, that nothing brings on a fit of coughing more readily than "fretting the patient." Now, we can hardly conceive any thing more likely to fret a child parched with thirst, and exhausted with the violence of former paroxysms, than snatching the honeyed cup from his lips before he had well tasted the refreshing beverage.

Some judicious remarks occur on the fever which is present in Hooping cough, and which in some instances nearly resembles Typhus. The author points out three states of fever as deserving of particular notice; the first is that anomalous febrile state, which accompanies, more or less, even the mildest forms of the disease. It seems to partake more of the inflammatory than the typhoid type. The pulse is variable, easily accelerated, rather hard, and at times irregular. The second state is typhoid. "In this state there is nothing so remarkable as the quickness of the pulse. From being full and moderately slow, it passes at once to almost insuperable frequency, and is often so weak as hardly to be felt." The third state of the fever is decidedly inflammatory. "The pulse is not so quick, but it is full and hard, attended with considerable difficulty of breathing, occasional pains in the chest, increased heat, loaded tongue, and all the other signs of pneumonic inflammation.

The author has less to observe on the state of respiration in Hooping cough, than we think requisite; we have no objection to his drawing upon Dr. Darwin, for the practical remarks of that writer are always valuable; but in a work evidently considered by its author as the only complete account of the disease of which it treats, we did expect to be favored with some original observations upon this very important function; as it is, the following paragraph comprises the sum of the author's information.

"From the state of the pulse, and the state of the breathing we can draw more certain conclusions, as to the nature and severity of the disease, than from any other circumstance whatever. *I have never met with almost any case,* where either the one or the other was much affected, where

there was not very considerable danger; and none where the two symptoms were conjoined, that did not prove fatal, unless opposed by the most vigorous treatment."

We are not clear that our conception of the author's statement, "I never met with almost any case," is correct, but we suppose him to mean that he *has* met with cases in which either the pulse or the breathing were much affected, without "there being considerable danger."

Among the unfavorable symptoms, Dr. Watt has noticed the urine deficient in quantity, of a high colour, becoming turbid on standing, the patient having a frequent desire to void it, while the quantity discharged is very small; the skin uncommonly dry and insensible to the touch; a pale leucophlegmatic appearance; skin, especially of the face and extremities, of a livid and dark colour; œdema of the feet and hands; nostrils dry and itchy; cutaneous eruption, if any, disappearing.

The reader will meet with some valuable remarks on the termination of the disease, the diagnostic symptoms, and symptoms of Bronchitis, which we have not space to detail. The account of the opinion of early writers on hooping cough, will also prove interesting to the medical scholar. The length to which this article has already extended, will not permit our citing any of the author's cases; but we shall avail ourselves of his account of the dissections because they are much less frequent than in most other diseases. We are all of us well acquainted with the symptoms of hooping cough, yet few of us have investigated the appearances after death.

The first dissection was of the author's own son, aged six years.

"The body was opened by Mr. Robert Limon, a pupil of mine, sixty-five hours after death, and the following notes were taken at the time by my friend, Mr. William Couper, surgeon, of this city.

"'The lungs appeared to fill the whole cavity of the thorax more completely than they generally do.

"'The anterior surface of the lungs appeared as if cover-

ed with whitish-coloured flat tubercles, (not unlike bad confluent small-pox,) as if some white fluid had been effused under the covering pleura, On making some incisions into the substance of the lungs, the cells were found filled with a whitish purulent-looking mucus, with only a small admixture of air. The cells immediately under the investing pleura, thus filled, were the cause of the external appearance of the lungs above described. Some very small portions of the lungs appeared to have the cells less full of this mucus than the rest, the external surface of these portions having a more natural appearance.

" 'The posterior surface of the lungs had a brighter appearance than the anterior, having more the look of recent inflammation.

" 'The inside of the trachea from the thyroid gland downwards, to an inch below the bifurcation, had its inner surface smeared over with the same kind of mucus, as that filling the cells of the lungs. Beyond this its branches appeared completely filled with the same mucus.

" 'The whole inside of the trachea, and its ramifications, was painted with red vessels, appearing to have been the seat of recent inflammation.'

" At this time it was thought unnecessary to carry the investigation farther; but next day my friend Mr. Muir, of Paisley, expressed a wish to ascertain the state of the stomach and bowels. In cónsequence of this the abdomen was opened, and the following notes were taken by Mr. Muir respecting the contents. It should be remarked, that even at this late period, there were hardly any signs of putrefaction.

" 'On laying aside the integuments, the intestines and stomach presented themselves in a very white or bleached-like appearance. There was a long patch of inflammation on part of the small intestines, and beside it another smaller mark of recent inflammation. A similar appearance was found on one part of the great arch of the colon, in which there was no fæces, but a little thin greenish coloured fluid. The mesocolon was wholly very dark coloured, near-

ly approaching to gangrene. On turning up the stomach, the under and external surface was as if painted with a brown colour, like new burnt coffee in appearance, and there was little of it free from traces of this colour. It was as if laid on with long strokes of a brush half an inch broad. Some of them were, however, narrower and shorter than others. On laying open the stomach, the internal surface had numerous read streaks, the marks of recent inflammation; there was an universal crust of lymphatic exudation, and much of it was collected in the upper part, owing to the position of the viscus when the body was examined.' "

Dissection 2.—Janet Watt, sister to the above, aged four years and a half. Her body was opened twenty-five hours after death, and the following notes taken by Dr. Graham:

" 'The skin is generally of a livid colour, and very dark in some places, an appearance which it had a tendency to assume some time before death. There were no signs of putrefaction. On opening the chest, the lungs were found of a purple colour, irregularly interspersed with whitish spots slightly elevated, which were found to be owing to a mixture of mucus and air under the pleura. There were no adhesions between the pleuræ, but the lungs had not collapsed nearly so much as usual. On the convex surface of the right lung a very small quantity of tough purulent-looking matter was observed, which seemed to have escaped by one or two small openings in the pleura, whether the consequence of rupture or erosion could not be determined. Similar matter was found interspersed through the substance of the lungs, but there was no where any cyst containing it. The lungs felt knotty, and uncommonly firm in some places; but on cutting into them no tubercles, such as are met with in phthisis, could be detected. In some places though their bulk was increased, they were firm, and sunk in water; in others they sunk from being collapsed, though not indurated. The pleura costalis seemed rather more vascular than common. The trachea was slightly inflamed on its internal surface, and covered with a quantity of frothy mucus, intermixed with small portions of a purulent-like matter,

which increased in quantity downwards, till it nearly plugged up the smaller ramifications. Before opening the pericardium, it seemed to contain a larger quantity of fluid than is usually observed, but it having been accidentally punctured, any fluid it might have contained escaped, without being noticed.

" 'The abdominal viscera seemed sound. The gall-bladder was full of dark-coloured, thick, viscid bile.' The head was not examined, but from the nature of the symptoms, there was little reason to expect disease in that quarter."

Dissection 3.—Margaret Beaton, aged three years and three months.

" The body was opened forty hours after death, in presence of Mr. Russel, several of his pupils, and myself. The skin was more livid than usual, but there was no signs of putrefaction.

" 'On opening the chest, the lungs appeared to have collapsed about as much as usual. Their anterior surface was more irregular than is generally found, and thickly mottled with a whitish ash colour. These whitish patches occupied about two thirds or more of the whole surface of the lungs,and were slightly elevated above the rest. Pressure on any part of the lungs produced or increased these whitish spots, around where the pressure was made, apparently by forcing along the air and mucus under the investing pleura. Almost the whole of the right lung had nothing of a cellular feel, but, as Mr. Russel observed, it felt like a piece of spleen or liver. On cutting into the substance of the lungs in various places, the air cells appeared to be filled with a viscid semipurulent mucus, which oozed out in great abundance. A considerable margin along the lower edge of each lung was of a bright red colour, felt solid to the touch, and when cut off, sunk readily in water.

" 'On laying open the upper part of the trachea, its internal surface was of a reddish floculent appearance, but without any inflammatory exudation. This inflammatory appearance increased as we proceeded downwards, till, in

the more minute ramifications of the bronchiæ, the whole surface was of a bright red colour, as if painted; but still there was little or none of that purulent-like mucus, usually found on inflamed secreting membranes. As far as we could trace these passages, the ingress and egress of the air appeared to be unobstructed.

" 'There were numerous adhesions between the right lung and the pleura costalis of that side; but these appeared to have been of some standing, or perhaps had no connexion with the present disease. They were more probably the effects of a pneumonic attack, which she had about a year ago, and since which she has always had more or less dyspnœa, particularly on any considerable exertion.

" 'The contents of the abdomen appeared to be sound, with the exception of about a foot of the ilium, which was very vascular, and of a red colour. Part of the mesocolon appeared also to be somewhat redder and more vascular than usual.

" 'On removing the skull cap, the dura mater adhered to it very firmly, but did not show any signs of disease. The veins over the surface of the brain were very turgid, but perhaps not more so than we usually find them in young subjects. There was no water in the ventricles, and the other parts of the brain appeared to be perfectly sound."'

Dissection 4.—Miss K. aged four years and a half.

"The body was opened twenty-five hours after death by Mr. Limon, in presence of Mr. Russel and myself, and the following notes were taken.

" 'The body appears very much emaciated. The skin is darker than usual, and stained here and there with livid spots. Left arm and leg œdematous. A place on the breast and neck, where a blister had been recently applied, of a dark livid colour. No signs of putrefaction in other respects.

" 'On opening the thorax, the lower part of the right lung was found to adhere firmly and extensively to the pleura costalis of that side. This portion of the lung seemed to be enlarged, and occupied fully that portion of the

chest. It was of a whitish colour, had lost all appearance of cellular structure, and on being pressed with the finger, it felt hard and gristly in some parts, and soft and pulpy in others.

" ' On removing the adhesions, a large abscess was discovered, ramifying through this part of the lung in all directions, and partly filled with purulent matter. The immediate parietes of the abscess were of a dense cheesy consistence, and varied from a quarter of an inch to an inch in thickness. Beyond this solid portion, the whole substance of the right lung was interspersed with tubercles, exactly similar to those met with in ordinary cases of pulmonary consumption. Many of these tubercles were smaller than peas, and some of them as large as hazel nuts. Some of them were slightly, others more extensively inflamed, and many of them were in a state of suppuration.

" ' The whole surface of this lung was covered with a layer of inflammatory exudation, and in many places the investing pleura appeared to be very much eroded and destroyed.

" ' The left lung was much more collapsed than the right, and exhibited those irregularities on its surface, and the same mottled appearances described in former cases. On examining its substance between the finger and thumb, it was found to have the same tubercular feel as the right, and much more solid than natural.

" ' Some parts had a peculiar reddish purple colour, and felt more uniform in their texture than the rest. The colour of these portions seemed to depend on the quantity of blood contained in them. When cut off, they sunk readily in water.

" ' On cutting into this lung, the number of tubercles was nearly as great as in the right, and were as much diversified in point of size, but fewer of them had arrived at a state of suppuration. On this side there were no adhesions, and the investing pleura did not appear to have suffered from inflammation as in the right.

" ' The mediastinum appeared to have suffered in the first

instance from inflammation, and latterly its cellular portion had become œdematous. On pulling out the sternum, part of it adhered to its inner surface, and part of it remained floating between the lungs like a quantity of jelly. The pericardium contained a much larger quantity of fluid than usual, but the heart itself appeared to be sound.

" ' The whole of the larynx and trachea were then removed out of the body and examined. The glottis and epiglottis were slightly inflamed. The internal surface of the trachea was also a little more vascular than usual, and was covered with the natural mucus. On proceeding farther down, the vascularity seemed to increase, but even on entering the bronchiæ, it hardly deserved the name of inflammation. At no place, as far as it was traced, could any thing like a lymphatic coat be discovered. Here and there we could perceive some particles of purulent matter, but these had evidently arisen from the abscess in the lungs.

" ' On opening the abdomen, the liver was found much enlarged, extending into the left hypochondrium, and downwards into the umbilical region. Its surface was of a whitish ash or clay colour, resembling boiled liver. The structure did not appear to be much changed, but the whole substance felt somewhat denser than usual. The gall bladder was full of a thin light coloured bile.

" ' The spleen was also enlarged, and its surface was rough and vascular, as if it had suffered from inflammation.

" ' The stomach was very much contracted, being little more capacious than the rest of the intestines. The internal coats were much corrugated, but no signs of disease. It contained a small quantity of fluid like thin gruel.

" ' The intestines were here and there of a dark colour, but this seemed to depend entirely on these portions having lain in a more depending posture than the rest. Owing to the want of time, the head was not examined. But we had little reason to expect any morbid appearances in that quarter.' "

For the treatment of this disease, Dr. Watt has enumera-

ted all the most favorite and approved remedies of the writers, which he has with much industry consulted; and though we do not find any thing novel in this part of the subject, we think he has fairly weighed the merit of the several modes of cure which he has noticed, has shown what combinations of medicines are most likely to succeed, and pointed out others which have less beneficial effects than have usually been attributed to them. This part of the work occupies 130 pages.

An appendix is subjoined, which contains a very interesting inquiry into the relative mortality of the principal diseases of children, and the numbers who have died under ten years of age in Glasgow, during the last thirty years. We shall content ourselves with selecting a few extracts.

"Taking an average of several years, I found that more than a half of the human species died before they were ten years of age, and that of this half more than a third died of the small pox, so that nearly a fifth part of all that were born alive perished by this dreadful malady."

Since the introduction of vaccination, the proportion of deaths from small-pox diminished in an astonishing degree; but on the other hand the fatality of measles was very much increased. "In the small-pox we have the deaths reduced to nearly a fifth of what they were twenty-five years ago; in the same period, the deaths by measles have increased more than eleven times." Thus, as the small-pox disappears, measles advance to keep up the usual waste of human life. The fact with regard to Glasgow is indisputable, and the author thinks that measles must in some degree be modified by small-pox. "That the measles (he remarks) should have been thus modified by the small-pox, is rendered highly probable by various analogical facts. The manner in which the vaccine disease prevents the small-pox is quite in point, and when it has failed in preventing them altogether, it has rendered them so mild, as not to be attended with the smallest danger. May not small-pox have a similar effect with regard to measles?"

This is an important subject for inquiry, but we have little

apprehension as to the result. We are somewhat surprised indeed that a writer possessed of so much acuteness and spirit of investigation as is Dr. Watt, should have so readily embraced a conclusion founded on analogy ; that, admitting the facts, he should have taken so little trouble to find other causes than that which he has alleged. Neither do we think his argument much strengthened by his quotation from Dr. Woolcombe, who makes Providence create children for the mere purpose of destroying them. "Since disease," says that physician, "is one of the appointed checks to excessive population, and the plan of Providence in the creation of human life, requires the termination of the existence of one third of its creatures, before they have attained the age of two years, it may be doubted whether the annihilation of so efficient an instrument as small-pox can be admitted without the substitution of some other equally destructive malady." It it not for such insignificant beings as reviewers to canvass the particular designs of Providence in the creation of man ; but without flying at so high a quarry, we may be allowed to question the propriety of calling in the Deity upon every occasion, to solve difficulties which a little attention on our own part might possibly explain. If men by debauchery unfit themselves for generating a healthy progeny, are enfeebled by the operation of poverty and unwholesome employments, or match themselves to unfit help-mates, are they to call in question the mercy of God, and accuse him of those consequences which are the natural result of their own misconduct? Epidemical disorders, indeed, seem to be beyond the control of man ; but we well know that his mode of living and peculiar circumstances have a very modifying effect upon them, and even these may be explained without invoking Apollo.

We have not had an opportunity of comparing the London bills of mortality with those of Glasgow during the period Dr. Watt describes ; but as far as extensive public practice in a wide district, and inquiry from physicians in great practice in other neighborhoods, can inform us, the

fatality of measles does not appear to be increased in London since the introduction of vaccination.

It seems the number of still-born children at Glasgow has increased something more than a per cent. and a half on the whole deaths. Dr. Watt, however, does not accuse either small pox or cow-pox of occasioning this misfortune, but attributes it to "the introduction of particular manufactures, by which immense numbers of women are employed in public works or confined to sedentary employments, by which the general health and vigor of the system must be materially impaired." "From this cause we may calculate not only on a greater number of dead-born children, but on a more puny offspring in general, and consequently on a greater number of deaths in infancy." So say we, and may not measles be influenced by such causes? The only fatal cases which have occurred to us, and these are very few, were precisely under such circumstances, the puny offspring of mechanics, dwelling in close unwholesome apartments.

In concluding, we hope that the spirit of inquiry on the subject will go forth, and that we shall shortly have accounts from different parts of the kingdom. If we have differed in opinion from the ingenious author, it has been, we trust, from the same desire for truth, and to encourage that ardor for investigation in others, which he possesses in an eminent degree.

Esse enim contemplationem veritatis, omni operum utilitate et magnitudine digniorem et celsiorem.

V.

Medico-Chirurgical Transactions, published by the Medical and Chirurgical Society of London. Volume the Fourth. London, 1813.

We have been fortunate enough to obtain a complete set of this work, the most valuable perhaps of any medical collection ever issued from the British press. In our last we selected a review of the third volume, we shall now attempt an analysis of the fourth; and, as is obviously proper in reveiwing foreign books, we shall quote largely. With the merits of this volume we have little concern; to offer our readers an epitome of its contents is our principal object. Yet we cannot help remarking that there are several articles which are scarcely worth publication, or if they are, would more become the pages of a periodical journal. To expose these, is the business of the English critics.

The volume before us opens with "observations on the venereal disease" by Mr. Fergusson, inspector of hospitals to the Portuguese army. He represents it as ordinarily treated among the natives of Portugal with very little medicine, and indeed as almost spontaneously cured. Mercury is there used to a very limited extent, and the primary symptoms are generally removed by topical remedies. Sarsaparilla, and other vegetables have full power over the disease in that country, and in Brazil.

"With the natives, the disease is very mild; curable for the most part by topical treatment alone, or wearing itself out, when received into the constitution, after running a certain course (not always a very destructive one) without the use of any adequate mercurial remedy." "They go out cured by topical remedies alone; and I have lived long enough amongst them to ascertain that their return to the hospital under such circumstances for secondary symptoms, is far from an universal, or even a frequent occurrence."

"The venereal list amounts to forty-six; they had all been several weeks in the hospital previous to my arrival, and two of them only were taking mercury, in an alterative form, for a supposed affection of the bones; the rest, being only primarily affected with ulcers and buboes, or secondarily with ulcers in the throat, were, with one exception, doing perfectly well from topical remedies alone; quite as well, certainly, as an equal number of patients, under the most favorable circumstances of a mercurial course for an equal number of weeks, could be supposed to do in an English hospital: and all will soon be discharged apparently cured, without having had further recourse to any mercurial remedy, unless my longer residence here enables me to enforce its use. I ought here to explain, that none of the ulcers are such trifling cases of chancres as we have seen at home, which can often be dried up with a piece of lint; nor even such as an English soldier would run with in affright to seek the succour of his surgeon. To these, the Portuguese soldier pays no attention whatever; but they are large extensive ulcerations, &c. p. 2, 4.

Mr. F. attributes the mildness of this disease to its having (as it were) exhausted itself in Portugal; that is, in former ages it run its course with little or no control from medicine, it raged with the most violent symptoms, and infected the population very generally, so that its strength is almost spent, and the disease has exhausted most of its venom. Small-pox also is in Portugal a mild disease.—We omitted to mention that the syphilis among the British troops was as malignant as in England, or even more so.

Dr. Percival of Dublin, relates that a healthy female, aged seventeen, in consequence of exposure to a draught of cold air, became the subject of a paralytic affection of the face and neck. For the relief of this, blisters were prescribed, which produced strangury. Afterwards there came on a sort of hysterical affection, or rather catalepsy, of a most obstinate character, attended with great irritability of the stomach. The disease seemed to exhaust itself, under the frequent use calomel and rhubarb "protected by opites."

"It is deserving of remark that throughout the whole course of the disorders just narrated, the most prominent feature of practical indication, was the great and obstinate torpor of the patient's bowels. Purgative medicines always afforded decided relief; and bad consequences always followed the neglect or inefficacy of them. Yet the evacuations were by no means so foul, or unnatural in their appearance, as I have commonly witnessed in intestinal derangements. Neither did the free use of calomel produce any ptyalism, or excessive discharge of bile, at any period of the disorder." p. 23.

The third article is a case of spasmodic affection of the muscles of the mouth and tongue chiefly, but showing a disposition to extend to other muscles so as not a little to resemble tetanus.

"She had an attack while I was present. Her tongue was drawn forcibly in a curved direction towards the left upper molares, the teeth were clenched, and the lower lip much distorted, from being drawn forcibly down, and to one side, by a strong spasm in the left depressor anguli oris, and depressor labii inferioris muscles. It continued some seconds, and gradually subsided. Her intellects remained clear during the paroxysm." The muscles of the face, neck, and chest, and the diaphragm, sympathised, and a "numbness was felt, running from the neck, down the left arm to the thumb and forefinger."—The disorder resisted blood-letting, cathartics, steel, and fœtid medicines. It was at length traced to the irritation caused by a number of carious teeth and fangs! These were extracted for the cure of the spasm, so that there were drawn, at different times, all the teeth of the left side of the upper jaw, except the dens sapientiæ, which, as the patient was fifty years of age, she had probably lost before.

Next follow two cases, by Dr. Chisholme. The first, a female aged 17, was affected with "a pain in the region of the liver, accompanied with irregular symptoms of hysterics," from which she was relieved by a course of mercury. In a few months the complaint returned with greater violence,

and accompanied with mental derangement;—the same remedy was again successful. Exposure to cold re-produced all the symptoms;—compression of the carotid arteries was tried, and by it the convulsions were stopped, but on a repetition of it syncope and catalepsy ensued;—the mercurial plan effected the third and "ultimate" cure. The subject of the second case was a woman aged 50. She, also, was affected with mania, following other symptoms chiefly nervous, and although relieved for a time by "evacuants," was not cured till after a mercurial course.

Dr. Bostock, having an opportunity of analyzing two vertebræ, softened in consequence of mollities ossium, has established by experiment that the theory of the deficiency of phosphate of lime in that disease is correct.

In the next paper we find an example of the good effects of "a purgative pill," and "the solution of arsenic," in a case of chorea, which had resisted other means.

A very interesting case follows, of "symptoms resembling tic douleureux," related by Mr. Denmark of Haslar Hospital. A soldier was wounded by a musket ball, which "entered the triceps extensor cubiti, about 1 1-2 inch above the inner condyle of the os humeri, and, grazing the inside of that bone, passed obliquely downwards through the brachialis internus, and out anteriorly near the bend of the arm." The wound healed readily, and without any morbid symptom. Afterwards it became the seat of excessive pain, which was not relieved by the most powerful opiates. He kept the fore-arm constantly bent, and in the supine position. "A small tumor could be felt in the site of the wound on the anterior part of the arm, which he could not bear to be *touched* without evincing additional torture." It was a burning pain, beginning in the extremities of the thumb, and three fingers nearest it, and extending up the arm,—shewing that the radial nerve was the seat of the disorder. The patient preferred amputation to cutting out a piece of the nerve.

"On dissecting the arm, I traced the radial nerve through the wounded parts. It seemed blended with, and intimate-

ly attached to them for the space of an inch. It had been wounded; and at the place of the injury was *thickened to twice its natural diameter*, and seemed as if contracted in its length. This contraction, I thought, partly accounted for the bent position of the arm, and the increased pain on attempting its extension; but on further examination, I was surprised to find on dividing the fibres of the posterior part of the wounded nerve, that there was a small portion of the ball firmly imbedded in it, which had been driven off by grazing the bone. This description of injury more fully accounts for the exquisite pain felt by the patient. The os humeri was discoloured where it was grazed by the ball, and the humeral artery was uninjured! The nerve was evidently *thickened*, both above and below the wound.'

We cannot but refer our readers to p. 128, of our former number, where they will find another case of enlargement of a nerve in consequence of a wound, which produced symptoms of tic douleureux. The limb was amputated, but as the enlargement extended beyond the line divided by the knife, the painful affection returned.

We would also refer them to a case related by Mr. C. Bell, (Operat. Surg. v. 2. p. 331.) of a sailor, who in falling " caught by the ham on a projecting bolt in the side of the ship." The bruise soon got entirely well; but some time after, the foot became the seat of pain, which daily increased. " This pain was of a peculiar kind, it was confined to the bottom of the foot and was like an intense burning, while there was not the slightest swelling or discolouration in the place." In the ham, however, Mr. B. felt a tumor " of a bony hardness," " which, when pressed, gave no particular pain, but rather a sense of prickling numbness down the leg." The patient's strength being exhausted by the violent pain, he was in a state too weak to be operated on, and died soon after he came under Mr. Bell's care. " On dissecting the limb I found a tumor under the fascia, and about three inches higher than the usual place of popliteal aneurism," with which the tibial nerve was incorporated; " it had much the appearance of a large ganglion

on the tibial nerve ; the fasciculi of the nerve could be traced but a little way into its substance, and in the interstices of the fasciculated bands a vascular fatty substance could be observed, which resembled marrow." This was, doubtless, a case of tic douleureux, the nerve being not only enlarged, but diseased in its structure.

We will not, on the ground of only three cases, assert that an enlarged or thickened nerve is the cause of this torturing disease ; but we invite those who may have opportunity, to examine whether such a morbid condition does exist. Should this be ordinarily the case, much light will be thrown on the obstinate character of the disease ; and we shall expect only temporary benefit from division of the nerve, or even from the removal of a part of it, unless the enlargement occupies a small definite portion, and our operations can be performed higher up than the *disposition* to enlarge may extend.

At page 53, we find another paper from the pen of Dr. Bostock, on "the nature and analysis of animal fluids." This is a brief account of the experiments of Dr. B. on this very interesting subject, which it is impossible to abridge. We shall, therefore, omit details and present our readers with such an outline as we have room for. He first divides animal fluids into two classes, albuminous and mucous, having severally a base of albumen, and another different animal matter which is uncoagulable, (and which has been called mucus,) each dissolved in water, and containing a greater or less proportion of salts. To these is added a third class consisting of particles suspended in an albuminous fluid ; this he calls "particled."

' The substances which I originally included in the class of primary fluids, were albumen, jelly, and the uncoagulable matter of the serum, which I denominated mucus ; but having been induced, in an early stage of my experiments, to deny the existence of jelly as a constituent of animal fluids, (an opinion which has since been amply confirmed by others,) the only two bodies which remain for consideration, are albumen and the uncoagulable matter.'

'The physical properties of albumen are well known, and are sufficiently distinct not to be confounded with any other substance. It is adhesive,* miscible with water in any proportion, and possessing the remarkable and characteristic property of being coagulable by heat. This peculiar process appears to be confined to a few animal substances, probably two, albumen and the fibrin of the blood; the former being coagulated by heat, the latter merely by being discharged from the vessels, and, as far as we have yet been able to discover, without the immediate co-operation of any external agent.† Albumen forms the chief part of the solid contents of the serum of the blood, of the white of the egg, and of a numerous class of animal fluids, which are discharged from what are called serous membranes, by a a process, probably more resembling the passage of a fluid through a porous substance, than by secretion.‡' p. 54, 55.

Analysis of albumen ovi, serum of the blood, and of a number of other fluids are given; we shall extract those of albumen ovi, and serum. The former consists of

Water - - - - -	85
Albumen - - - -	12
Uncoagulable matter,	2.7
Salts - - - - - -	.3
	100.0

* "I restrict the term *adhesive* to the property of causing the cohesion of surfaces to which the substance is applied; *tenacious* or *viscid* seem more properly to designate the power of being drawn into threads, depending upon a firmer union between the particles of the body."

† "Coagulation has been confounded with other processes from which it ought to be discriminated; from *gelatinisation* or the property which a warm solution of jelly possesses of becoming concrete as it cools; from *precipitation*, or the effect which the oxymuriate of mercury and many other substances possess, of forming a compound with an amimal substance which is insoluble in water; and from the effect of *evaporation*, by which the watery part of a solution is removed, and the animal matter left in a solid form."

‡ "The word *secretion* literally implies merely separation, but in the language of modern physiology it is supposed, that not merely the pro-

Serum is composed of

Water - - - - - -	88
Albumen - - - - -	10
Uncoagulagble matter	1
Salts - - - - - -	1
	100

The other fluids enumerated by Dr. Bostock, as albuminous, are, fluid from spina bifida, liquor pericardii, fluid from hydrocephalus, fluid from hydrocele, liquor amnii, fluid from ascites, fluid from knee-joint, fluid from inflamed stomach, fluid from a blister ;—the analyses of these are given, and they vary from the two we have quoted, chiefly in containing less albumen. The knee-joint and stomach yield, in a healthy state, mucous secretions ; the specimens above analyzed and found albuminous were the products of disease ; a fact worthy of recollection, as it proves that secreting vessels may, in consequence of disease, (debility?) become mere outlets of transudation.

Should all this be confirmed by future experiments, and be received as physiological truth, a fine field will be opened for the ingenious to adapt the theories of Malpighi and Ruysch, the acini and pennicilli, to the new doctrines. If we go on in prosecuting these investigations, who can say that we shall not at last enter *à posteriori* into the very *penetralia* of secretion!

We proceed to the second division of animal fluids—

'The next class of fluids are those to which I propose to give the name of *mucous*. I have adopted this term, both as the one generally employed, and as also conveying a sufficiently distinct idea of the substances described. They may be defined viscid or tenacious fluids, capable of being drawn into threads, but not of being poured in the form of drops : con-

portion, but the nature, of the ingredients of the secretion differ from that of the fluid from which they are produced. The water of hydrocephalus, although so unlike the serum of the blood, is produced by transudation, not by secretion."

taining a great quantity of water, but not readily miscible with any additional quantity. Saliva may be adduced as a specimen of them: and to the same class belong the nasal mucus, the mucus found in the stomach, that occasionally discharged from the bladder, and that from the intestinal canal. These fluids differ from the albuminous, in being principally composed of a substance which is not exactly similar to any thing in the blood; and on this account they are to be considered as the products of secretion, rather than of transudation. They also differ in another circumstance, which is of considerable importance in a patholocical point of view; that whereas the albuminous fluids seem to be all confined in close cavities, the mucous fluids, in their natural state, are poured out into passages that communicate with the external surface of the body.' p. 74.

Dr. B. details experiments made on four mucous fluids, saliva, mucus from the stomach, a substance voided from the bladder, and fluid from an ascites suspected to be encysted;—the proportions of the several substances are not given, but uncoagulable animal matter was the chief solid ingredient.

The difference between this uncoagulable substance and albumen is shewn by means of several chemical tests. To give an adequate account of these would be to quote the greater part of the paper; the following extract will serve to lead our chemical readers into the proper track of investigation.

'The effect of re-agents upon uncoagulable matter is quite different from that upon albumen; oxymuriate of mercury has no effect; nitrate of silver blackens, without precipitating it; muriate of tin precipitates it very gradually, while acetate of lead immediately unites with it, and, forming a white dense substance, leaves the fluid perfectly transparent and without any impregnation.' p. 69.

Of the third class of fluids, the particled, there is little said. Their "peculiar characteristic consists in their containing particles visible to the naked eye." Dr. B. examined some which were "discharged from tumors situated both

in muscular and in glandular parts." We are uncertain whether some of these fluids were not purulent; although they are called "tumors," "*confined* tumor," &c. they are said to have been "discharged," without alluding to any particular operation. This language, though not perspicuous, might indeed apply to *tumors* whose contents were fluid, but Dr. B. considers these three classes as "all that it seems at present necessary to establish," and yet he makes no mention of purulent fluids; so that unless he meant that some of these "tumors" contained pus, he has omitted one of the most important of animal fluids. This omission is, perhaps, most probable; for the description of the contents of these tumors does not agree entirely with that of pus, especially the size of the particles, which in pus require a microscope. We quote the following to give our readers an idea of the properties of these fluids:

'One of these which I had an opportunity of examining with a good deal of minuteness, was procured from a confined tumor on the thigh; its basis consisted of an albuminous fluid, and the particles were composed of a substance very similar to spermaceti, both in its physical and chemical properties. Like this substance it exhibited a considerable lustre, which it communicated to the fluid, so that when it was gently agitated, it gave to it a waved or glossy appearance, not unlike satin.' These particles were separated and dried, and retained their lustre for some time, and, from several experiments, are concluded to be a peculiar substance of a nature 'intermediate between albumen and wax, and which may therefore be called albumino-cerous matter.'

We have next a paper of considerable length by Sir Gilbert Blane, on "the comparative prevalence, mortality, and treatment of different diseases." We must present this to our readers by extracts, rather than by an abridgement of the whole. He first proceeds to a brief recital of diseases formerly known in Great Britain, collecting it from various sources, and enumerating separately, "those which have arisen and have since disappeared in this country in the

course of time ; those which have arisen but have not disappeared ; those which have prevailed with various degrees of frequency and fatality at different periods ; and those that have been more prevalent in our times than in former ages."

'To the first description belong the leprosy and the sweating sickness. The leprosy became general all over Europe in the twelfth century, and was supposed to have been imported by the crusaders. It became extinct, and was again imported into England, but has not been known in Europe, since the beginning of the sixteenth century.

'The sweating sickness was supposed to have been imported by the army which invaded England under Henry VII. It prevailed from 1485, till 1551, and in some years during one month in autumn, with a fatality approaching to that of the plague.

'To the second description belong small-pox, measles, and perhaps all the other specific contaginos, and the venereal disease ; and though the exact periods of the origin of each of these cannot be ascertained for want of historical records, there is every reason to believe that there was a time when none of them existed.

'To the third description belong the plague, the dysentery, intermittent fever, typhus fever, the small-pox, the venereal disease, the scurvy, and the rickets. It is doubtful whether the plague ought not to be referred also to the former list, for though it resembles the plague of the ancients in point of fatality, its characters are quite different from those described by Thucydides and other authors, so that it was perhaps generated in the middle ages.'

The first mention of plague in England is in the year 430, the last mention in 1679. Dysentery and intermittent fevers are stated to be rapidly decreasing. Typhus fever, " by which is understood that which takes its origin from accumulated filth and want of ventilation in jails, hospitals, ships, the habitations of the poor, and the close buildings of large cities," has become less frequent and malignant in consequence of " the measures taken for its prevention, foun-

ded on the knowledge of its remote cause," which is a discovery of our own times. Syphilis has been mitigated from more cleanly habits, and greater skill in the cure; small-pox from inoculation and vaccination. Scurvy which was prevalent in the seventeenth century, with the genuine characters of sea-scurvy, "is now nearly as rare at sea as on land," in consequence of better diet, cleanliness, and the general use of fresh vegetables on land, and lemon-juice in the navy. Rickets also is said to have decreased.

'To the last description, namely, those which are more prevalent in modern times than formerly, belong the scarlet fever, consumption, gout, dropsy, palsy, apoplexy, lunacy, and generally all those diseases of which the brain and nerves are the seat; and of which the increased prevalence in this country in our time, is owing to there being a much greater proportion of the population who live independent of bodily labor than in any former age: and perhaps, something may be ascribed to the general use of tea and coffee.'

Scarlet fever, though known in all ages, has never been epidemic till within seventy years, which is in part ascribed by Sir G. Blane to the facilities which schools afford for its propagation. Luxury and other *improvements* have caused the increase in other diseases. But consumption is supposed to find more victims in the great number of weak and sickly children who are brought up only by means of good nursing, and who would have perished in infancy in savage life.

Sir Gilbert Blane considers the remote causes of "all predominant disorders" as threefold, "contagion, noxious exhalations of the soil, and depraved habits of life." These are all more or less subject to human control, so that cleanliness, ventilation, the cow-pox, draining of marshes, &c. have, already deprived the two former causes of half their force. The removal of depraved habits of life consists in moral regulations; and as palsy, gout, dropsy, &c. are more frequent in our own times, we cannot lay claim to habits as moral as those of our ancestors.

Several other circumstances influencing health are no-

ticed, such as the supply of London with water, the use of soap and body linen, removal of filth, and variations in the seasons. The latter, however, do not much affect the health among the British in the present age, except very cold winters, of which only one occurred during twenty years observation. From a consideration of all circumstances, the author is led to a presumption, that "those fluctuations called by Sydenham constitutions, do not, as he conceived, depend on any mysterious and inscrutable changes in external nature, but on the compound effect of the state of the weather, and the concentration of human effluvia which was more incident to that age than the present." p. 110.

This paper next presents an account of St. Thomas' hospital, and tables of the diseases treated by the author both in hospital and private practice, with the number of deaths. It also contains some very cursory remarks on the cure of diseases in general. All this we shall pass over, in order to present our readers with a highly important extract from the supplement to the article.

'Dr. Watt, of Glasgow, the well-known author of a treatise on diabetes, and himself a great promoter of vaccination,—in the course of his researches into parish registers, found to his great surprise and mortification, that the number of deaths of subjects under ten years of age had not been diminished since the introduction of vaccination; though the mortality from small-pox had, for the last ten years, been reduced to a fourth part of what it had been in the preceding ten years. Anxious to discover the cause of a fact so unexpected, he entered upon a laborious examination of all the parish registers of that city, from which it appeared that since the extensive practice of vaccination, ten times more children had died of the measles than formerly, which fully accounted for the stationary state of mortality of those under ten years of age.'

'Vaccination has not been carried to near so great an extent in London as in Glasgow, but as the mortality of small-pox has, on the average of the last ten years, been di-

minished in the former to almost one half; we may expect some influence from it on the mortality of measles, if Dr. Watt's allegations are founded on nature.' 'It appears by the London bills that this mortality (for the last ten years) is more than double of either of the preceding series (of ten years). And I find, upon inspecting the same bills as far back as the year 1700, that, during the whole of the last century, the annual mortality from measles exceeded 400 only in seven instances; whereas they have exceeded that number eight times in the last ten years.'

These terrible facts have excited much attention in Great Britain, and we find in this supplement, and in some late periodical works, various causes assigned for this increased mortality of measles. Our author supposes that it may be owing to "local and temporary fluctuations." Another thinks that the epidemic which first attacks will find most victims among the feeble, and that, small-pox being vanquished, the field is left for the deadly operations of measles. According to another, the number of women employed in sedentary occupations in Glasgow, has occasioned "a greater number of dead-born children, and a more puny offspring in general," who encountering measles first, have swelled the list of its mortality. A fourth speculator, wild with theory, considers measles as the means employed by Providence, instead of small-pox, to effect the "termination of the existence of one third of his (rational) creatures, before they have attained the age of two years." We have sought in these transactions, and in our latest pamphlets, for some more *solid* consolation in this very appalling prospect, and find the three following, which we gladly present to our readers.—In a note sent to the press after Sir G. Blane's supplement, it is stated that Dr. Stanger, physician to the Foundling Hospital, ascertained that out of 131 patients in that hospital who had measles after vaccination, *two* only died; and that of 131 who had measles after small-pox, *eleven* died.—In the Edinburgh Medical and Surgical Journal for January 1814, Dr. Bevan of Monmouth, writes, "never in the whole medical history of

our parish, have hooping-cough and measles been so prevalent as within the last ten months, and never was their progress marked by fewer instances of serious disease;" 150 are supposed to have gone through the measles, of which one died decidedly of measles, and one a fortnight after measles.—At the same page of that Journal (94) it is remarked, that in 1808, when measles were very fatal in Edinburgh, it was ascribed to vaccination, until it was found to be particularly fatal among a body of militia, "of whom *probably* few had been vaccinated, and the greatest part *must have had* the small-pox in its natural form." Were we to consult our feelings we should enlarge upon this subject, but it is to be decided only by farther experience; and until it is so decided, speculation on *such* a subject is absolutely criminal.

An analysis of the remainder of this volume will be given in our next.

VI.

An Inquiry into the Probability and Rationality of Mr. Hunter's Theory of Life; being the subject of the first two Anatomical Lectures delivered before the Royal College of Surgeons of London. By John Abernethy, F. R. S. &c. Professor of Anatomy and Surgery to the College. 8vo. *pp.* 95. *Longman and Co.* 1814.

From the Edinburgh Medical and Surgical Journal, July, 1814.

Medical and chirurgical science is indebted to Mr. Abernethy for so many solid and valuable additions, the result of his own investigation, the product of his own unquestioned talent, that his reputation is not likely to be advanced by any success which he may obtain, in advocating the hypothetical opinions of any other man, however distinguished. Appropriate, therefore, as the discussion of

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this Hunterian doctrine might be, as introductory to a course of lectures connected with the Museum of John Hunter, and delivered under the same roof, it would have been well if the compliment had been deposited there, or had been left to be cherished in the remembrance of the auditors of these lectures. The easy and somewhat elegant style in which they are written, aided by the animation of delivery, must have been calculated to impress the minds of the listeners favorably both towards the author and the advocate of the doctrine; but we do not conceive that the logic, either of the one or of the other, will stand the test of a deliberate examination, or that the establishment of the hypothesis, if it were made out as satisfactorily as Mr. Abernethy maintains it to be, would be of any value to the physiologist or pathologist. Indeed the objection of being worthless is not confined to this, but is applicable to all speculations about the nature of primary causes: these are beyond the reach of our powers; and are therefore improper objects of our labor; we have nothing to do but with their results, which are alone subject to our cognizance. A theorist may, indeed, display some ingenuity in bringing together a number of imperfect analogies, and in magnifying the points of resemblance among them, and thence may fancy that he is approaching some general cause, from which they all spring; but let us examine these analogies in other points, which the partial advocate has kept out of our sight, and let us collect a multitude of other phenomena, which he has omitted to present to us, because no similarity, but all manner of diversity, was to be observed in them; and we shall be satisfied that these hypotheses are mere fictions of the fancy, as flimsy as the imagery of the poets.

That *electricity is life*, is, we apprehend, the hypothesis "the probability and rationality" of which Mr. Abernethy has undertaken to defend; and we shall attempt to follow him through some of his trains of reasoning. We were very much baffled in the outset, we must confess, by the extreme want of precision and perspicuity, which is found

in the interpretation of some leading terms. First we are told, that by the word *theory*, is meant "a rational expectation of the cause or connexion of an apparently full or sufficient series of facts; by *hypothesis*, a rational conjecture concerning subjects in which the series of facts is obviously incomplete." p. 8. And in the next page we are requested to reflect, "that hypothesis and theory are the natural and inevitable result of thinking; so that if we refuse to allow of any theory, we must prohibit all thought." And we are farther informed, that, "since thinking is inevitable, our chief inquiry should be how we ought to think or theorize."—"Our theories, hypotheses, or opinions, for to me all these words seem to refer to one and the same act of the mind," &c. p. 12. So that, as Darwin said long ago, in apology for his own hypothetical fancies, we are to understand that "to think is to theorize;"* a vague and useless acceptation of terms, which is altogether at variance with the specific definition with which our author set out. Nor can we accord with him in his estimation either of the proper origin or of the utility of an hypothesis. He would have us invent our hypothesis first, and investigate the facts hereafter; and thinks "it is highly probable that it was his hypothesis respecting life which incited Mr. Hunter to inquiries by which he has been able to supply the deficient facts, so as to establish his conjectures, or convert his hypothesis into a theory." p. 13. Surely this is not the true proceeding of philosophy, to enter upon investigation with pre-conceived opinions, and to multiply observation with the view of confirming them. The distorted conception and representation of facts which a favorite hypothesis, is apt to produce, and the falsehood and error which it thus contributes to propagate, might be amply illustrated by a reference to medical records. Nor does it appear to be either very complimentary to Mr. Hunter, or very correct, to suppose that he was only led to the long series of valuable observations, with which he enriched physiological and patho-

* Preface to Zoonomia.

logical science, by the stimulus of his pre-conceived hypothesis concerning life. This observation is, indeed, somewhat incompatible with another statement of Mr. Abernethy respecting him, when he says, "I know of no opinion of his that was lightly or loosely formed, or that was not logically or cautiously deduced from the facts before him." p. 21.

As a preliminary to the discussion of the hypothesis, Mr. Abernethy relates the opinions of several observers relative to the structure of the muscular fibres, respecting which he considers our knowledge as very limited, in consequence of our limited powers of perception. He then proceeds to describe the principal phenomena connected with irritability or muscular motion; namely, the superior strength and tenacity of the living over the dead muscle; the pain and weariness which result from long continued contraction; and the necessity for alternate remission and action, with the exceptions to this principle in some sphincter muscles, and in violent cramps and tonic tetanus. "The rigid contraction of the muscles after death is the effect of irritability: it is its last act. A considerable force is required to overcome this contraction, or to bend the rigid limbs of the dead body, when it has recently taken place. The force required to effect this, gradually diminishes till the muscles become quite pliant; and then, and not till then, does putrefaction ensue." p. 30. In other cases, however, as when death is produced by lightning, or large charges of electricity, or by certain kinds of injuries and diseases, Mr. Hunter observed that this contraction, and even the coagulation of the blood, is prevented, and putrefaction rapidly commences: whence that physiologist drew the inference, that "the principle of life may in some instances be suddenly removed, or have its power abolished, whilst in general it is lost by degrees." Mr. Abernethy then notices the variety of contractility that occurs in some animals, and in some muscle in other animals, the motions of which are very slow, but powerful and permanent. "The American sloth supports its weight for a very long time by fixing its claws into the branches of trees: an act

which would speedily weary muscles of an ordinary character. The muscles of the legs of birds that roost, seem to have a similar power of contraction." The peculiar distribution of the arteries in the limbs of these tardigrade animals, as demonstrated by Mr. Carlisle, and the similar arrangement of vessels of the legs of fowls, shewn by Dr. Macartney, may be subservient, Mr Abernethy thinks, without being essential, to these modes of action.

Proceeding to the consideration of the hypothesis by which these phenomena have been attempted to be explained, Mr. Abernethy rejects, first, the doctrine, that contraction is "the effect of some chemical change occurring in the part;" and, secondly, the opinion, that "the contraction of irritability is a property of the muscular fibres." His arguments in confutation of the latter opinion are not very satisfactory: they are three. First, he says, properties are generally considered as permanent qualities, continually operating, which is not the case with the contraction of irritability: secondly, the faculty is connected with different arrangements and qualities of matter, and not with one peculiar arrangement, as would be expected: and thirdly, as he believes the muscular fibres to be not continued from one end of the muscle to the other, so he thinks any breach of continuity would completely frustrate the contraction of the whole muscle, if irritability were a property belonging to the fibres; —an inference which we do not comprehend. The two preceding arguments are founded upon assumptions, as to the nature and connexion of certain properties with certain conditions of matter, and are merely conjectural.

Having rejected the two hypotheses just mentioned, the lecturer proceeds "to inquire into Mr. Hunter's opinion, that irritability is the effect of some subtile, mobile, invisible substance, superadded to the evident structure of muscles, or other forms of vegetable and animal matter, as magnetism is to iron, and as electricity is to various substances with which it may be connected." The principal, or rather the only argument adduced in support of this doctrine, is, that all matter possesses a *vis inertiæ*, or an indisposition to

move unless impelled to motion, and a disposition to continue in motion unless retarded. Now the matter of animals and vegetables is common in inert matter, *therefore*, " the necessity of supposing the superaddition of some subtile and mobile substance is apparent." p. 41.

In order to shew, then, that this superadded substance is the matter of electricity, which pervades all nature,

——agitat molem, et magno se corpore miscet,

Mr. Abernethy reasons thus—

" Taking it for granted that the opinions generally entertained concerning the cause of electrical motions are true, analogy would induce us to suppose, that similar motions might be produced, by similar causes, in matter organized as it is found to be in the vegetable and animal systems.

" The phenomena of electricity and of life correspond. Electricity may be attached to, or inhere in, a wire; it may be suddenly dissipated, or have its powers annulled, or it may be removed by degrees or in portions, and the wire may remain less and less strongly electrified, in proportion as it is abstracted. So life inheres in vegetables and animals; it may sometimes be suddenly dissipated, or have its powers abolished, though in general it is lost by degrees, without any apparent change taking place in the structure; and in either case putrefaction begins when life terminates.

" The motions of electricity are characterized by their celerity and force; so are the motions of irritability. The motions of electricity are vibratory; so likewise are those of irritability. When by long continued exertion the power of muscles is fatigued, or when it is feeble, their vibratory or tremulous motions are manifest to common observation, but the same kind of motion may be perceived at all times by attention, as has been shewn by Dr. Wollaston in the Croonian Lecture for the year 1810. It is then, I think, manifest, *that Mr. Hunter's conjectures are the most probable of any that have been offered as to the cause of irritability.*" p. 41-3.

This is in reality the sum of the inferences, to which such

a string of loose and imperfect analogies can possibly lead, viz. that Mr. Hunter's conjectures possess a sort of probability, at least equal to the *suppositions* of other people! But surely if we reflect on the multitude of phenomena in the two organized kingdoms of nature, which bear no sort of resemblance to the operations of electricity, the inference in favor of the identity of the cause of these phenomena must be altogether inadmissible. But Mr. Abernethy contends that the experiments of Sir Humphrey Davy have solved the great mystery of chemical attraction, by shewing its dependence upon the electric properties of all matter; by demonstrating that electricity controls the ordinary operations of nature, so as to make potash pass through a strong acid without forming any combination; and that it causes the whirlwind, and the water-spout, splits the oak, and levels the firm tower, and makes the earth tremble.

"When, therefore, we perceive in the universe at large," he adds, "a cause of rapid and powerful motions of masses of inert matter, may we not naturally conclude, that the inert molecules of vegetable and animal matter, may be made to move in a *similar manner* by a similar cause?" and again, "If then it be electricity that produces all the chemical changes we so constantly observe in surrounding inanimate objects, analogy induces us to believe that *it is electricity which performs all the chemical operations in living bodies*; that the *universal chemist* resides in them, and exercises in some degree peculiar powers, because it possesses a peculiar apparatus." p. 50.

Now, though it is an admitted axiom in philosophy, that similar phenomena, occurring under similar circumstances, imply a similarity of cause; yet surely it is a great misapplication of terms, when either the phenomena or circumstances accompanying a thunder-storm, a water-spout, a volcanic explosion, or even an experiment on the Voltaic battery, are said to be *similar* to the functions of either animal or vegetable life. But either our faculties are very obtuse, or there is a considerable obscurity in the language of our lecturer; for, after the perusal of these passages, we

were fully impressed with the opinion, which we stated in the outset, that Mr. Abernethy maintained electricity to be life; nevertheless, immediately after the sentences just quoted, we find him asserting, that, "it is not meant to be affirmed that electricity is life." (p. 51.) What then is meant? Possibly the reader may discover it from the passage which follows.

"I only mean to prove," says Mr. Abernethy, "that Mr. Hunter's theory is verifiable, by shewing that a subtile substance of a quickly and powerfully mobile nature, seems to pervade every thing, and appears to be the life of the world; and therefore it is probable that a similar substance pervades organized bodies, and produces similar effects in them." (Ibid.)

Yet the lecture concludes by the statement of the author's opinion, that Sir Humphrey Davy has realized the hypothetical speculations of the Pythagoreans, by demonstrating the existence of the *anima mundi*, the Ψυχη of these philosophers; and we had just been told that electricity was the "universal chemist" demonstrated by that distinguished philosopher. Perhaps, therefore, we are bound to infer, that it is not easy, even for men of genius, to think clearly, when they enter the labyrinth of speculation upon subjects that are actually without the bourne of human research.

The second lecture commences with a neat sketch of the structure and functions of the nerves, and of the opinions of physiologists respecting the uses of ganglia. Mr. Abernethy traces the gradations in the complication of the nervous system, from the lower order of animals up to man, from the first appearance of a visceral nerve in the lowest creatures, that are possessed of organs for the preparation of nutriment, to the appearance of a nervous cord, more or less beset with ganglia, and lastly to that of a kind of ganglion or brain at the extremity of this cord, which gradually becomes larger and more complex, as the series ascends to man: and he remarks on the extensive connexion that is established among the vital organs, through the me-

dium of the visceral nerve, which is thence denominated in the human subject, the great sympathetic nerve. And thus from the brain, medulla spinalis, and visceral nerve, all the parts of the body are amply supplied with nerves.

Mr. Abernethy then proceeds to inquire how far Mr. Hunter's theory of life may be adequate to explain the phenomena of the nervous functions. He first shows, by several facts and arguments, that the brain is the actual seat of all sensation, and the source of all volition; and thence, he maintains, "it necessarily follows that *motions* must be transmitted to and fro along the nervous cords, whenever they (sensation and volition) take place." The want of elasticity and tension, and the pulpy structure of the origins and terminations of the nerves, he observes, render the old suppositions, that these cords were capable of mechanical vibrations, inadmissible. It was afterwards conjectured, that the nerves were tubular, and that the communications were made between the sensorium and their extremities by the motions of a subtile fluid. This was the opinion of Haller, and Mr. Abernethy considers it as a sensible opinion for the time. From this, indeed, Mr. Hunter's supposition does not essentially differ; for he maintained the inherence of a subtile and mobile substance in the nerves, without conceiving them to be hollow tubes. This supposition of Mr. Hunter's is made more specific by Mr. Abernethy, who identifies it with electricity, or something so like electricity, that we cannot distinguish the difference. And this "theory of life," he thinks, "is a verifiable theory, and affords the most rational explanation of the phenomena of irritability, and of those nervous functions that have been considered." p. 87.

We cannot conceal our surprise, that this should be the serious opinion of any philosopher. Surely the various hypotheses alluded to are nothing but expressions of the fact, that between the sentient extremities of the nerves and the common sensorium there is a rapid and reciprocal communication, by means of which, sensation and voluntary motion, and irritation and involuntary motion are pro-

duced; but they add nothing to our knowledge of the essential nature of that communication; because we are acquainted with nothing exactly analogous to it in any form of unorganized matter. Whether we assert that the communication consists of intermediate vibrations, of a subtile fluid, of an electrical substance, or of an impulse propagated along the nerves, we therefore express only the *connexion* or *sequence* of the internal sensation and the external impression;—a fact beyond which we shall, in all probability, never be able to proceed. The knowledge of this fact is all that is requisite to enable us to arrange the observations, which we make on the functions of vitality, *i. e.* in other words, to explain the phenomena of health and disease, and all the important sympathies, which Mr. Hunter led the way in pointing out, and which are nothing but inexplicable comexions between different organs, which the philosopher may record and arrange, and then he will have attained the summit of human knowledge. With this degree of knowledge we must be content, if not satisfied; for "fatiguing" as doubt and uncertainty may be to the human mind, the shadow can never supply the place of the substance; and it is surely but a shadow which we reach, when we overstep the limits just mentioned. These notions of philosophizing, however, our author professes not to understand; and he speaks in a tone of censure of those, to whom (from the adoption of similar views) no hypothesis is satisfactory, and who propose none themselves for the adoption of others. Such a proposal would, in fact, be incompatible with such opinions, and ought not to be imputed to any proud pretensions to "a philosophical turn of mind which exempts them from vulgar prejudices."

"I mention these things," Mr. Abernethy observes, "because I am aware that there are some who say sympathy is a term without any direct meaning, and that all which Mr. Hunter said on the subject of life explains nothing. What Mr. Hunter meant, I believe I understand; what persons of different sentiments, whom I acknowledge to possess great information and ability, mean, when they talk

in this manner, I am not so well able to discover. They seem to deny that life can be any thing which may be seen or felt. They seem to wish us to believe that they have that philosophical turn of mind which exempts them from vulgar prejudices, and no theory appears to them satisfactory, neither do they propose any for our adoption." p. 91.

We shall not infer that Mr. Abernethy intends to intimate, that a disposition to adopt these hypotheses has its foundation in vulgar prejudices, as that may not be deemed the legitimate converse of his proposition. But we do not perceive the applicability of the following aphorism to the subject in question, although its correctness may be admitted; that "in the uncertainty of opinions, wisdom would counsel us to adopt those which have a tendency to produce beneficial actions." p. 93. For it is not very obvious, that the conduct of mankind can be much influenced by the speculations of physiologists about a vital principle, or that the existence or non-existence of such a superadded substance, as distinct from the corporeal and intellectual part, can be the foundation of any practical consequences.

Notwithstanding the high names, therefore, by which this mode of theorizing is sanctioned, and notwithstanding our unfeigned respect for the talents of the present advocate in its favor, we continue to believe that it is at variance with the right rules of philosophy, that it contributes to add nothing to the actual stock of knowledge, and that the collection of analogies and distant resemblances in objects essentially different in a much greater number of circumstances, is an exercise rather calculated to form the poet, than the interpreter of nature.

VII.

Tracts on Delirium Tremens, on Peritonitis, and on some other internal Inflammatory Affections, and on the Gout. By THOMAS SUTTON, *M. D. of the Royal College of Physicians; late Physician to the Forces, and consulting Physician to the Kent Dispensary.* 8vo. *pp.* 272. *London.* 1813.

From the Edinburgh Medical and Surgical Journal, July, 1813.

We have been pleased and instructed in the perusal of these tracts; and must applaud the candid and unostentatious manner in which so much information is conveyed. Had we been consulted, however, we should have recommended a different mode of communicating observations like the present to the public. We disapprove of inflating a volume with individual cases, unless when each case contains something important which could not be so well detailed in a more general way, or when a number of individual cases, with all particulars, are required to establish new facts, which might otherwise be disputed. We have no hesitation in saying, that the substance of this volume, excellent as it is, might have been as well, indeed far better, condensed into the space of half a hundred pages.

The first of these Tracts consists of cases and observations on delirium tremens; a name employed by Dr. Sutton to designate a disease, concerning which we have already occupied our pages, in giving the valuable communications of Dr. Pearson and Dr. Armstrong. It appears that Dr. William Saunders has, for many years, lectured on this affection at Guy's, discriminating it from phrenitis. We agree with Dr. Sutton, that the investigation of the delirium tremens has been unaccountably neglected; but, from what we have ourselves published on the subject, it can

scarcely be said, that "it has not yet taken a station in medical writings."

The attack of this complaint is more or less sudden, in different instances. Sometimes for a few days at its commencement the patient is merely incapable of his ordinary duties and exertions; a constant restlessness, debility, and inappetency, and occasional vomiting take place, with dulness and dejection of spirits, and headach; in a short time confusion of intellect; a staring wildness of the countenance; tremor of the hands, and in some degree of the whole body, succeed. The pulse is not so frequent as in the delirium of fever, nor so full and strong as in phrenitis; it seems to participate in the universal hurry and tremor. The tongue is usually moist; and there is little thirst or heat of skin. The bowels are generally, though not invariably, open.

Occasionally the patient recovers without farther aggravation of symptoms: but too frequently the disorder becomes more violent; the countenace becomes more anxious and wild; the tremors assume the aggravated character of subsultus tendinum; and the confusion of ideas is displayed in total forgetfulness, in complete alienation of mind, and unrestrained delirium. The pulse is at length very frequent, but cannot be distinctly felt, on account of the general tremor. Still the tongue remains moist, there is little thirst, and the skin is totally cool, sometimes with clammy perspiration; in the violence of the symptoms there are sometimes involuntary evacuations.

The duration of these symptoms are various; they rarely continue, in the degree of violence described, for more than a few days; but in a milder form, they sometimes endure for some weeks.

This affection appears to arise only in persons addicted to spirits, and in consequence of excess or habitual indulgence in them. Dr. Sutton relates the case of a lady who suffered from the delirium tremens, from habitually taking the tincture of lavender, in large quantity. The disease frequently occurred to Dr. Sutton's observation, on the coast

of East Kent, from the facility with which smuggled spirits are there procured. p. 56.

There exists much obscurity respecting the nature of this disease. We have no accurate dissections of the bodies of those persons who have died from it. Fortunately, under Dr. Sutton's care, few instances affording an opportunity for dissection have occurred. It is regarded by our author, though we believe without sufficient evidence, as an idiopathic disease of the encephalon. It is more insidious than inflammation of the brain, and is not attended with the same violence of fever, or the same intolerance of light or sound; and it appears, in some measure, to be characterized and distinguished from phrenitis, by the peculiar tremor already noticed. The state of the pulse, too, and of the tongue and skin, are sufficiently peculiar to afford the means of discriminating it from inflammation of the brain. We must rely also on the same symptoms in distinguishing between delirium tremens and idiopathic fever with delirium.

It does not appear so easy to decide between the delirium tremens and mania. Dr. Sutton appears to rely too confidently on the distinction arising from the nature of the mental alienation, which, in the former disease relates, as he conceives, solely to the patient's private affairs. But this is by no means the case. We have, at the very moment of writing these lines, a patient whom it is impossible to convince that he is in his own room at home; and that his desks and chests are secure from depredation. Besides, mental alienation is so infinitely varied, that it would be impossible to confide in any variety of it, as a means of diagnosis; and we may add, that, of all kinds of mania, none is more frequent than that which engrosses the mind by the private affairs of the individual.

We now proceed to speak of the cure of delirium tremens. Dr. Sutton gives ample and satisfactory testimony to the efficacy of opium, in soothing the agitation of body and mind, and in inducing refreshing and salutary repose. It is given in considerable doses, and repeated until the

effect desired be induced. When smaller doses have proved ineffectual, two grains of the extract, or forty drops of the tincture of opium, taken after the interval of two hours, have, in the third or fourth instance, frequently produced the desired tranquillity and sleep. Dr. Sutton usually repeated this medicine every night, for a short period, after the patient had in a considerable degree recovered.

Dr. Sutton disapproves entirely of the depleting plan of treating this affection, having "witnessed the cases of this disease to be always the most rapidly fatal in robust and plethoric persons, even where blood-letting was most used, without the aid of opium." Dr. Sutton does not deny that blood-letting may be necessary in some cases; but when the loss of blood may have been deemed requisite, he would immediately afterwards resort to opium, as the only remedy deserving confidence.

Of blisters, Dr. Sutton speaks with decided disapprobation. He considers them not merely as useless, but as absolutely detrimental, exciting serious irritation, and opposing the soothing virtues of the opium.

Purgatives may be required, not as remedies for the disease, but to remove costiveness, which is occasionally obstinate from the employment of the opiate remedies.

Dr. Sutton does not give us any account of the effects of wine and cordials in this complaint. He seems to have relied, and with good reason, on the efficacy of his favorite remedy, opium. In conclusion, he states, that he has witnessed 22 cases of the delirium tremens, within the last three years; that four only died, and of these four, three were in such a condition on his first visit, as to preclude almost all hope of recovery.

Observations on inflammation of the peritonæum, and especially on the chronic kind of this affection, constitute the second part of the volume. This form of the complaint has been treated of by Willan and Pemberton. It is an insidious, obscure, but a very serious and dangerous disease. Dr. Sutton observes, that from this circumstance, and from the general uneasiness, languor, and depression

of spirits attendant on it, it is often mistaken for indigestion, hypochondriasis, or what is termed a nervous complaint; it is therefore treated carelessly, or neglected, until the disease is, on some occasion, unexpectedly aggravated, and assumes the more acute character. Sometimes its progress continues without any remarkable exacerbation, slowly and insidiously, to a degree of imminent danger, before any particular alarm has been excited. Uneasiness or obscure pain is felt in some part of the abdomen, sometimes little increased on pressure. The appetite is impaired, and food taken increases the distress of the patient; the pulse is not materially affected; the bowels are not obstinately costive.

We do not notice the symptoms of the aggravated form of peritonitis, as they are too well known to our readers to need repetition here. The inflammation is apt to extend to the other parts and organs of the abdomen, to give rise to effusion of lymph or serous fluid, and the formation of adhesions and dropsies. This complaint has also a particular tendency to become suddenly increased, and when apparently removed to make an unexpected return. In many of the patients whose cases are related by Dr. Sutton, the inflammation returned several times; from this circumstance it is inferred, that more and longer attention to regimen and diet is necessary than is usually enjoined after acute diseases. Dr. Sutton notices, in particular, the following, as necessary injunctions on the convalescent: First, to avoid too much exercise, and especially those kinds which require the action of the abdominal muscles, and which agitate and disturb the contents of the abdominal cavity. Secondly, to avoid any tendency to costiveness of the bowels; and, thirdly, to abstain from excess in diet, and altogether from the stimulus of wine.

Dr. Sutton recommends the early employment of the lancet in peritonitis. Of blisters and fomentations he entertains a dubious, or rather a low opinion. But he in particular advocates the application of a cold lotion to the abdomen; he presents us with many instances in which this remedy ap-

pears to have been of undoubted utility. We are inclined, therefore, to hope for some good from this remedy, and are happy to refer our readers to a previous part of our present number for further observations on the subject. It appears from Dr. Sutton's observations, to be peculiarly adapted to the chronic state of peritonitis, where the symptoms are not such as to justify blood-letting. Dr. Sutton also recommends the exhibition of opium in inflammation of the peritonæum, as efficacious in subduing a tendency to vomiting, and in mitigating the severity of pain and suffering of the patient. We begin, however, to suspect Dr. Sutton of too strong an attachment to this remedy; we have it again recommended in diseases of thoracic viscera, and again in gout. p. 191, 216.

We have, at the close of this tract, some observations on the application of the cold lotion in inflammation within the chest,—of the lungs, and perhaps of the heart: it is difficult to ascertain with what real and essential benefit; but, apparently, with relief to the pain, and satisfaction to the feelings of the patient, and certainly without inducing any of those bad effects which we should have been inclined to have feared from it.

In this part of Dr. Sutton's work, we have two letters from A. Stewart, M. D. and minister of Bolton, on the subject of treating complaints of the chest. From these we make the following extracts, as they contain all the peculiarities of that gentleman's mode of treating these affections, now so much in vogue among the higher classes in this part of the island.

"In treating breast complaints, it has long been with me a maxim, to overlook comparatively the idea of inflammation except in the very first stage; and to aim *gradually*, *prudently*, and *steadily*, at regaining a *cool*, *braced*, and *properly seasoned* state of the constitution, as my first object.

"Many reasons, which I need not now specify, incline me to suppose, that what, in the progress of breast complaints, is called an *inflammatory state* of the lungs, is not really so (I mean not a *real active* inflammation); and, at any rate,

I know, from a good deal of experience, that it yields more readily to a different mode of treatment, than that commonly in use."

"I propose a trial of the following things:—Diet that is nourishing, without being stimulating, as (besides milk and vegetables) an egg, a bit of fresh animal food, beef-tea, broths, and particularly veal broth, jellies and arrow-root; and for drink, water, either pure, with sulphuric acid, or with a *tinge* of port wine, or occasionally spruce beer, ginger beer, or common small beer. As much exercise as possible, without fatigue, on a spring-deal, within doors, and in a carriage in the open air. A regular system of spunging the body with water and vinegar (at first tepid, and afterwards cooled down to the natural temperature) at least once a-day, and following it always with a great deal of rubbing; and a blister issue on the breast.

"As to medicine, I recommend a cupful of cold infusion of bark, with some drops of sulphuric acid twice a-day; and, I think, generally some preparation of steel with a bitter.

"I am also partial to the use of the Plummer's pill, in such cases as Lady ——'s, but it was not mentioned in my letter; and, on coming to London, I found it inadmissible, from the state of her bowels." p. 180, 182.

Dr. Sutton concludes, that "there are cases of consumption which will stand a better chance of recovery on Dr. Stewart's plan, than the common routine of practice;" although he "finds no ground to hope that it will ever be ranked in any other class than among the most fatal diseases."

Dr. Sutton suggests, that, as the momentary application of cold water, in the form of affusion or ablution, is so effectual a febrifuge, that the more continued application of the lotion would be likely to afford beneficial results in continued fevers; a suggestion which undoubtedly deserves a fair and ample trial.

The last part of this volume is devoted to the consideration of the cure of gout, which may be called the dis-

ease, as well as the opprobrium medicorum. We were not in the least surprised that Dr. Sutton, as well as Sydenham, Cullen, Brown, Gregory, and a thousand other eminent physicians, has been afflicted with this malady.

Since the veil of hypothesis has been removed, we have not heard so much of the danger as of the difficulty of removing the arthritic paroxysms. Without pretending to say that all that was formerly thought or written on this point was wrong, and that there is absolutely no danger of metastasis in gout, we believe that it is now the general opinion, that, in persons of unbroken constitution, the cure of the gouty paroxysm may be safely attempted. Dr. Sutton thinks that the gout has too long been regarded as a disease of the system. His opinion is, that its principal and exciting cause resides in the alimentary canal.

But it is of more importance to our readers to learn the facts, than the opinions which Dr. Sutton's work is intended to support. The most material of them is, that purgatives, opium, and cold topical applications, are safe and efficacious remedies on the first attacks of the gout; for we omit to notice the excellent, but well-known rules which are here given respecting the regimen of diet and exercise. One part of regimen, indeed, is here, with much propriety, particularly insisted on, namely, constant attention to the state of the bowels. It is on this principle that laxative mineral waters are effectual in preventing the paroxysm. And this is especially necessary after the use of purgatives, which generally leave a tendency to costiveness. The *eau medicinale* has, in particular, a tendency to contract the bowels; and, therefore, although it may remove the paroxysm of gout, when present, it renders its return more frequent.

Dr. Sutton proposes to imitate the effects of the eau medicinale, by the combination of a grain or two of elaterium, with forty or fifty drops of tincture of opium; and this medicine has been administered with success. The frequent use of the eau medicinale has afforded the best means of judging of the effect of purgatives. Dr. Sutton seems to have derived much advantage from ordinary purgatives, and

from the use of opium, and local application of cold in his own case. But we do not find any very extended trial of these remedies in the volume before us. We rather regard the subject as brought forward for discussion, than as having received a full and fair investigation.

In conclusion, we have only to repeat our almost unqualified approbation of these valuable tracts. We think we have given our readers the most material part of the volume; but still must do the author the justice to say, that those who have recourse to the original work itself, will derive additional gratification and instruction.

VI.

A view of the Mercurial Practice in Febrile Diseases, by JOHN WARREN, *M. D. President of the Massachusetts Medical Society, and Professor of Anatomy and Surgery in the University of Cambridge. Boston, Wait & Co.* 1813.

American physicians have a good right to offer opinions on mercurial remedies, for in no other country have they been so extensively used or so fully tested. Some may call mercury our hobby, and, so far as this is meant to imply that it is a favorite remedy, we cannot deny it; but any reproach that may be attached to such a term we must entirely disclaim. We do not rest our faith on the encomiums which have been lavishly bestowed on this remedy, but on the testimony of the many skilful practitioners who unite in sanctioning its extensive use. We suspect that it has been undervalued chiefly by those who through prejudice have refused it a fair trial, or who wanted the discernment necessary for its successful application.

There is a sort of knowledge in medicine which cannot be described, and of course is incommunicable. An intelligent physician forms in his own mind a sort of theory of the operation of every medicine. This theory when redu-

ced to terms is seldom found correct, or rather, there are so many invented by different prescribers, that all cannot be true. It serves however as a chain to unite one's ideas; and, when founded on actual observation, is so blended with fact and checked by practical caution, that its owner is in no danger of committing an error. Such discernment is almost intuitive, and is far from being an universal gift; and on this principle we may account for the great success of certain remedies in the hands of some physicians and their total failure when managed by others. The former discern the exact stadium of the disease at which their remedy becomes proper; the latter prescribe more at random. These are like rustics, who fail either from abruptness or delay; while the former, like attentive courtiers, watch the golden opportunity, and from it elicit success.

If there are few who are gifted with this faculty almost intuitive, much fewer are they who can communicate their knowledge. We are willing to believe that Darwin, and Cullen, and Boerhave, &c. have so connected their doctrines with their practice, that in their minds the one has constantly illustrated the other. While torpor, or spasm, or viscidity, remain only mental terms, they are the signs of whatever ideas their owners may choose to attach to them; but when written, they are no better than so many words in plain English, and convey express meanings. In the former case the theory is first contrived and the term arbitrarily attached to it; in the latter, the theory is borrowed (at least in part) from the ordinary meaning of the term.

We are also willing to believe that authors who have attempted to theorise respecting the modus operandi of mercury, have themselves understood their several doctrines. Yet it must be acknowledged, that when they have reduced their ideas to words, they are not always very intelligible. Thus, our author enumerates three modes in which the effects of mercurial medicines can be explained.

'Their mechanical operation on the fluids.

'Their specific action on the noxious matters themselves in the animal body, separate from the consideration of the diseased actions in the body.

'Their action as a stimulus on the system.' p. 12.

Now, to say nothing of the two former, as they are out of fashion, and therefore not likely to attract many friends, let us examine how much wiser we are for regarding mercury as a stimulant. We cannot deny that an emetic is a stimulant, that a cathartic is a stimulant, that a tonic to the stomach or liver is a stimulant, and that a medicine promoting secretion and absorption is a stimulant; and we will even admit, for argument's sake, that a medicine which produces a new disease is a stimulant. All this may be very correct logic, but it is very bad therapeutics. Closet students may attribute all these effects to the operation of a stimulus upon the excitability; but a practitioner at the bed-side, must give up these dogmas of the cloister, and prescribe his emetic not because it is a stimulus, or he might as well order brandy or ammonia, but because it is a peculiar stimulus, that is, because it is an emetic; he must advise a course of mercury, not because it is stimulus and will introduce a new disease, for many poisonous drugs will do the same, but because it is a peculiar stimulus, that is, because it is mercury.

The stimulant operation of mercury has been ascribed to its imparting oxygen to the blood. This opinion originated with Drs. Beddoes and Girtanner, and seemed to derive support from several analogous effects of oxygen; thus an oxygenated ointment was prepared "which was superior in effect to the blue ointment," and hyper-oxy-muriate of potass was found to cure venereal sores. It is a sufficient refutation of the inference drawn from these facts, occasionally observed, that we hear no more of these remedies. Nitric acid has also cured some cases of syphilis, and what effect can this have in common with mercury, but the imparting of oxygen to the system! This also has passed away. Yet for this theory is Dr. Warren an advo-

cate. We doubt not that his views are clear enough to his own mind, but we do not think that they will bear a very severe scrutiny.

'In whichsoever way, whether by the skin or by the mouth, mercury is received into the system, the preparation probably undergoes a gradual decomposition, by a sort of digestive action of the vessels, the metal giving, if I may use the expression, a kind of fixation to the oxygen, by which it is conveyed and applied to the extremities of the secreting or exhalent vessels.' p. 22. Now, if this be true, it must be proved that oxy-muriate and sub-muriate of mercury may be decomposed in the stomach and bowels, and the oxides left free for absorption. Next, this "digestive action of the vessels" must be such as can deoxydate not only the black oxide, from which the quicksilver is easily recovered by chemical means, but it must have power over the yellow oxide which is a more obstinate substance; the vessels must also digest the red precipitate which has occasionally been administered, and has produced salivation and a cure. Such a difficulty, we are aware, will be easily set aside, by saying that the vessels may be to "digest" all mercurial oxides, unless the contrary be proved. This art of shaking off the *onus probandi* is not the least important in theoretical controversy.

Since the introduction of pneumatic chemistry, many substances have been discovered which part with oxygen far more readily than the oxides of mercury, and these, if duly persevered in, ought to supercede the use of that mineral, if oxygenizing the blood was the only requisite. Gold, if used in the state of a salt or of an oxide, should give sufficient fixation to oxygen to convey and apply it to the ends of the vessels, but this has lost its reputation. So that after all our reasonings, we are forced to accede that the presence of mercury is essential to produce the several effects which are ascribed to oxygen. Dr. W. admits that "the emetic and cathartic operation of these medicines depends on their action, as compound bodies, on the stomach and intestines." And why should not the compound of

oxygen and mercury produce some effect on other vessels than those of the stomach and intestines? We see no reason why they should not; on the contrary, we are disposed to consider mercury, whether in the viscera or the vessels, as producing effects peculiar to itself. By naming these effects from the medicine producing them, we avoid the vague term of a stimulus, and learn to connect with the name of the substance, a series of animal operations, which, with great regularity, follow its exhibition. This is the proper method of generalising. It was the method followed by Newton himself; for gravity is but a name for a train of effects, and expresses rather a law, to which all matter is obedient, than the cause of that law, or of those effects. So, by using the term mercurial action, we give a name to certain consequences, which is expressive of their visible remote cause, without presuming to understand the mode of their production, which if not above our faculties, is at least beyond what they have yet attained.

We repeat it.—The real causes of the phenomena of nature are not open to our faculties. True philosopby considers the general law as the cause of all the phenomena which flow from it; and the most general law as the fiat of the deity. We may advance many degrees before we arrive at the direct fiat, but by degrees we must advance. We venture to affirm that mere excogitation has never discovered a single law of nature. They whose minds were best disciplined in the school of observation, have erred like madmen when they allowed their imagination to escape from this discipline. Sir Isaac Newton's course was glorious while restrained by observation and calculation,—when he shook off these fetters, he strayed to the deserts of æther. The same will apply to medicine. Let us be content to believe that our science is in its infancy. It is no disgrace; philosophy was in infancy from the period of its birth till the time of Lord Bacon. He taught men to build with solid materials, even although the work should go on slowly; yet what a stupendous fabric has been erected, and in how short a time! So will it be with medi-

cine. When physicians shall deny themselves the luxury of hypothesis, their substance shall no more be wasted. Each slender contribution of experience shall be laid by like the miser's farthing; and if we enjoy not the fortune, our heirs assuredly will. If our minds yield to these truths we shall be content to seem to know but little. We feel ashamed to say that mercury produces mercurial action; yet if we sift the truth out of the mass of hypothetical chaff, we shall find that this is our whole harvest. It is not too late to retrieve our fault. If we candidly confess that this is the sum of our actual knowledge with respect to the action of mercury, the sense of shame may perhaps stimulate us to some farther discovery of the truth; and this will be more readily effected when we are recovered from the paths of error. But to return.

The term 'stimulus' would be sufficiently proper as a general name for substances producing action in the animal system, were it not connected with the idea of excitement. It may be logically true, that excitement must follow the application of a stimulus, but it is a truth of no practical value. Excitement above the natural standard may exist in a part, and yet not be visible in the system. The effect of certain medicines and poisons is such that we cannot discover even local excitement. The debility produced by some of them is excessive, and yet no proportionate excitement has preceded. And the effect of each is so different from the rest, that one is forced to admit that there are many operations which may be produced on the living principle, and that confusion must result from blending them all under the name of excitement. By admitting this variety of operations, we shall no longer remain under the delusion that animal actions are simple, admitting only of increase and diminution; a doctrine which can never be proved correct but in theory, and which, according to our present knowledge and faculties, is certainly not correct enough for practice. By admitting this variety, we may direct our attention to the peculiarities of every species of action, artificial or morbid, and if we find in any of the latter too powerful an enemy, we shall have learnt which

of the former may with greatest success be brought forward as its opponent. This is no visionary plan ;—it has been followed with eminent success in prescribing mercurial remedies. Syphilis, one form of morbid action, first yielded. Yellow fever, and typhus, have been cured ; and small-pox, measles, &c. have been mitigated. Even diseases purely inflammatory have found an antagonist in mercury ; if the remedy were a stimulus producing excitement, how could it relieve a disease of excitement? Disease and antidote, therefore, although the ancients may have failed to understand the nature of their opposite effects, are terms expressive of circumstances actually observed.

There may be other effects of great importance produced by the medicines we prescribe to change a morbid action. Calomel, for instance, cleanses the alimentary canal, and thus removes, in some cases the cause of disease, in others a source of great aggravation. Calomel promotes absorption, and as this may be produced to its fullest extent, without raising the mercurial action (as evidenced by salivation) to its highest grade, it is probably not merely a part of general mercurial action, but an effect produced by calomel in common with other medicines.

The liver seems to be peculiarly under the control of calomel. At p. 80, we find recited an opinion of Dr. Currie of Guy's hospital, that it emulges the biliary ducts. Dr. E. Miller considers it is an effectual " detersive," and occasioning the discharge of more " bilious and other acrid matter of every description at once, than other cathartics at several evacuations." A chemical theory has been invented to explain this, by Mr. Scott of Bombay ;

' He mixed the resinous base of the bile of a buffalo with half its weight of the red calx of mercury and ten or twelve ounces of water. On heating the whole, he was surprised to find that the bile became more soluble in water ; This he supposed was owing to the oxygenation of the resin by the pure air of the calx.' p. 81. If this chemical union should take place in the living body, when mercury is used as an evacuant, must there not be some passage for it to the

liver, less circuitous than the blood vessels? is retrogade action of the ductus choledochus more improbable than retrogade action of the absorbents? And if the above chemical theory be not tenable, does the entrance of mercury into the liver by that route to act as a "detersive," involve greater improbability, than an hypothesis founded on sympathy would involve of mystery?

We also suspect that the "alterative" effects of mercury, as they would be termed by Mr. Abernethy, are not a part of general mercurial action, for those effects are produced only by very moderate doses, and they cease when salivation comes on.

All these subordinate operations of mercury are themselves often curative, but they do not explain the benefits of its exhibition in those diseases where salivation, that is, general or complete mercurial action, is necessary to the cure.

What we have advanced respecting the effects of this mineral, is chiefly an account of facts, and will, therefore, make but few converts; theory is the net in which converts are to be caught. A few such words as stimulus, excitement, sympathy, "digestion in the blood-vessels," &c. may be strung together and form a rosary, which a devout theorist will repeat with as great enthusiasm as a catholic does his beads. But to say that calomel has cured typhus, is to assert a mere truth, which minds of a certain cast will not attend to until it be suitably embellished. Now we are of so dull a turn, as to give knowledge a hearty welcome even in a homely dress; but in spirit really philanthropic, we should rejoice if a good court-dress could be procured, that it might please the more fastidious. If such have followed us thus far, they may now return, for we shall proceed to a cursory review of the practice contained in the book before us, without once digressing for a theory.

Dr. Warren does not pretend to have over-distinct ideas concerning several forms of fever which have occasioned infinite dispute among medical men. His object is to shew what have been the effects of mercurial remedies; and that objections to their use should not arise from a name,

and that all parties may be accommodated, no less than four divisions are made of the various forms of fever which have been indiscriminately called yellow fever. "*Malignant pestilential fever*" specifies the disease for which Dr. Chisholme prescribed mercury, and laid the foundation of its present extensive use. A purge of calomel and jalap was first administered in some cases, but no other evacuant; afterwards calomel in large doses, with or without opium, until salivation was produced, "which was generally in twenty four hours"; and which practice was never unsuccessful when "pushed to the full extent."—In "*yellow remittent*," another form of fever, or at least another name, the same practice was pursued; in one of the cases recited, bloodletting was premised. We cannot but insert the following paragraph, as it affords in favor of the mercurial practice, an argument of that peculiar nature which seldom fails to convince,—a conclusion arrived at by reasoning both a priori and a posteriori.

'It is remarkable, that about the same time, those two practitioners, Dr. Chisholme, and Dr. Bryce, should have come to the same conclusion, with respect to this disease and its remedy, by different paths; the one, from the diseased state of the liver, and the other abdominal viscera, having inferred the aptitude of mercury for the cure of the disease; the other without the help of dissections, from the success of mercury having deduced the nature of the complaint. This circumstance may, perhaps, with justice be urged as strong evidence in favor of the treatment.' p. 72.

"*Fever* combined with *hepatic* and other *visceral affection*" is another name of the fever for which mercury has been so successfully employed. In these cases bloodletting has been sometimes premised. Some very respectable practitioners dissent from this practice, and consider mercury serviceable only as an evacuant. Dr. W. however appears to be favorable to the full mercurial treatment.—These three denominations of fever prevail abroad, and our author speaks of the symptoms and treatment only as described by others. Typhus, and "yellow fever," as they have prevailed

in Boston, form the subject of Part III. We shall first notice the latter.

The "yellow fever" was epidemic for the first time in Boston in 1798. It began in June, and was supposed to originate from putrefying hides and spoiled beef, and no evidence of importation could be produced. During six weeks of the period of its prevalence, the air was perfectly calm, and the heat extreme. On dissection, congestion and its effects, were visible in the liver, lungs, and stomach. This led to the use of calomel, under which, and the disease having assumed a milder character, the cures became more numerous.

'Calomel was usually prescribed, after bleeding and a purge, in doses of two or three grains every two hours, till the mouth became sore; upon which the disease invariably gave way; in many persons however this could not be accomplished. In some cases of salivation, dangerous hæmorrhages ensued.' p. 115.

In 1802, the "yellow fever" again appeared in Boston, "with all the circumstances of its former malignity." The same plan of treatment was pursued, and with similar good effects; but the only case related in which bloodletting was prescribed, terminated fatally. The origin of this epidemic was disputed, but Dr. W. admits that circumstances "afforded a plausible support to the belief of importation." Mercury is considered by our author not only as a remedy for yellow fever, but he even thinks its "prophylatic power indisputable."

These four diseases, must have some common character which renders them all subject to the "Sampson of the materia medica" almost unassisted by any other means. We make this remark, not as an argument for their complete identity, but to show how far they are removed from typhus. In the latter disease, mercury has not had effects, in any degree, so beneficial as in yellow fever of all denominations. We speak of its general action on the system; as an alterative, it has been attended with good effect in the early stages, followed by bark in the later periods. After its use has been intermitted on account of

debility, and wine and bark, with a restorative diet, administered with little good effect, calomel again had recourse to, has proved eminently advantageous. But mild evacuations, cold ablutions, mineral acids, bark, and wine, stand much higher as remedies, than mercurial preparations, in the cases recited by Dr. Warren. Dissections of patients who have died from typhus, have not exhibited visceral congestion in any great degree, and in this, perhaps, a part of the difference between typhus and yellow fever may consist.

This account of the partial success of mercury in typhus, by no means corresponds with the good effects said to attend its exhibition, by many of our practitioners in this city. Here, it is said to have as great power over this disease as over yellow fever. The following may be the cause of these different results: Dr. W.'s cases are of typhus gravior, or at least, of genuine typhus; but we suspect that the fever ordinarily called typhus in this place, is in fact synochus. We certainly have seldom occasion to prescribe for typhus gravior.

Our author does not greatly advocate the use of calomel in small-pox, considering it as advantageous only in common with other cathartics, and ascribing to the cooling regimen the good effects usually attributed to mercury. In measles this mineral is also recommended, chiefly on the authority of Dr. Holyoke, of Salem, who considers it as efficacious "in correcting the secretions from the glands of the nares and fauces;" and "in the pneumonic and anginous symptoms, which are often the most troublesome and dangerous attendants of the disease, he has great confidence in the exhibition of mercury, particularly in emetics of turpeth mineral, (yellow sub-sulphate of mercury.)"

In a violent form of cynanche maligna, attended with erosion and excoriation "wherever the saliva was lodged," which occurred in 1735, calomel alone was depended on to stop its progress. But in 1802, when it again appeared, the debility was too great to admit of its use, except in combination as a mild cathartic. What its efficacy in croup has been, we cannot make out; it would seem that this

disease has generally been fatal at Boston, as well as elsewhere. We must confess, that an explicit account of the author's mode of practice, and its success, would have been more satisfactory than the glance he has made at the practice of one or two other physicians.

In common with most practical men, Dr. Warren doubts whether "it has ever effected a cure in real hydrocephalus internus." He mentions a case of a child, in whom the disease progressed regularly, in spite of a mercurial course kept up for three weeks; coma, &c. came on ten days before death.

'The head was opened, and from the ventricles of the brain, was extracted a quantity of water, amounting to about ten ounces. This volume of fluid occupied so much space in the cranium, as to have borne a considerable proportion to the whole cavity. It had not the effect of distending the cranium at the sutures, which were not yet closed.' p. 148.

From this fact he very decisively argues, that the brain has absorbents, and, from the supposed quality of increasing absorption, which mercury possesses, that it must be a proper remedy.

In "pneumonia and pleurisy" the efficacy of mercury is attributed to its promoting expectoration. This, no doubt, is one of its good effects, but if this alone were required, it should not be administered until the usual period of expectoration, the third or fourth day. But it is of use earlier in the disease, and, without searching into its minute operation, we should prescribe it on the mere ground of its general utility in inflammation.—The only case of phthisis pulmonalis, in which our author found it useful, was, indeed, attended with expectoration "of matter of a purulent appearance," but was not well enough marked to increase our confidence in this drug. We have never seen the occasional success of mercury so well accounted for, as in a paper by Dr. E. Black, of this city. See Med. Rep. vol. xiii. p. 116.

Our author prescribes calomel in dysentery, without

opium, giving it in doses of three grains every three hours, or with ipecacuanha in a large dose. In one case of this disease "in the most violent form," twenty-five grains of ipecacuanha with fifteen grains of calomel, "produced a most copious evacuation of fœcal matter, which had been long retained, and he had never another dysenteric discharge."

In rheumatism, mercury is also supposed beneficial, when administered so as to affect the gums.

These are the several "febrile diseases" for which mercury has been prescribed. Our author's remarks on them are entirely practical, and they comprehend many valuable observations besides those bearing directly upon his subject. They constitute a valuable epitome of American practice in many diseases Our analysis has been very general, and we regret that our limits do not admit of larger quotations.

There are two particulars concerning the use of mercury to which we would draw the attention of our readers ;—not those of a speculative turn, but practical men. Mercury is useful in many inflammatory diseases, such as pneumonia, rheumatism, cynanche, &c. ; it has less good effect in typhus gravior. Do these facts throw light on each other? And may we conclude that all the diseases of which mercury is curative, are inflammations, or their consequences? We do not suggest this for mere speculation, to be asserted or denied at a moment's warning, but for the reflection of the scientific practitioner, for his observation and judgment. If found correct, the inference will be, that all these diseases may at some period be cured or relieved by depletions. This would coincide with the inference, which may be drawn from the utility of blood-letting in very many diseases, as practised by Dr. Rush and others. We might enlarge on these particulars, but we fear lest we should obscure in hypothesis, what we have deduced from practice, and what we have expressed in terms as practical as possible.

ESSAYS AND CASES.

I.

A case of Hypochondriasis, or Tristimania; with remarks on this disease. By Samuel Akerly, Hospital Surgeon, U. S. Army.

Communicated to the Editors of the N. Y. Med. Mag.

The life of our illustrious countryman, Dr. Benjamin Rush, was prolonged to a good old age, that posterity might profit by his manifold labors in medical science, particularly on the subject of mental diseases. After the publication of this last effort of his vigorous mind, his work was done,—he became sick and died. He has erected to himself a monument, "aere perennius," more durable than brass, and has left to his posterity a legacy of incalculable value. Such is his late work "Upon the Diseases of the Mind."*

The following case of tristimania accords so well with his observations, his arrangement, and his treatment of the disease, as to afford an inducement to its publication. But for a perusal of this great work of our medical sage, the history of this case would have been forgotten or remained in obscurity.

In the month of July, 1807, a man of small stature, a shoemaker by trade, and apparently about forty years of age, was attacked by that form of mental derangement denominated hypochondriasis, or, more properly termed by Dr. Rush, tristimania. Sad, indeed, was the state of his mind, and great were his sufferings. Corporeal pains and afflictions are borne with patience and resignation, but the pangs

* This work was published in the Autumn of 1812, and he died on the 19th of April, 1813, in the 69th year of his age.

of a disordered mind are beyond endurance. Such was the state of this patient. The efforts to relieve himself from this plenum of misery were constant, violent, and ineffectual. Had he been left to himself, death alone would have relieved him from his wretched condition. Humanity prevented him from committing suicide, by restraining him in the use of means, and thus his life was preserved that his health might be restored in the twinkling of an eye. The providence of God was never more strikingly displayed than in relieving this miserably wretched being from his torments.

On the 6th of July, 1807, the maniac was running at large in the city of New-York, lacerating his flesh, and beating his head with violence against the sides of the houses. Had he been a resident of Asia, this madman's exercises would have been taken for the exercises of some fanatic dervise, and death must have ensued. But when, from the appearance of blood and bruises, it became evident that he was deranged, he was taken up by the citizens and conveyed to the New-York Alms-House. There being no accommodation for maniacs in that institution, he was directed to the New-York Hospital. The Lunatic Asylum being unfinished, patients of this class remained in the cells of the old building under the care of the house physician, in the absence of the attending physician. Acting at that time in the former situation, the patient came to my charge.

In the afternoon of the 6th of July, a crowd attended the unhappy being to the Hospital gate. With his arms tied behind him and in the greatest agony, his face bruised and swollen, his lip torn to pieces and streaming with blood, his attendants ushered him into the Hospital. I met them at the door and inquired into the case. The poor maniac was eager to tell his own misery, but with difficulty collected words to convey it. His language was, indeed, copious, but his agitation was so great that he could hardly utter a sentence, being interrupted by constant efforts to tear his lip to pieces. His attendants knew nothing of the man, but that they prevented him from beating out his own brains.

At length he conveyed the information where his distress was, and upon which his mind was deluded.

In his upper lip there was a worm gnawing his flesh and penetrating into his body, and unless he could tear him out he would soon be beyond his reach, and inevitably destroy him. This was the cause of his misery.

He was assured of the possibility of relief; and with a smiling countenance, I patted him on the shoulder, and bade him no longer be uneasy, for I would cut out the worm. His eyes sparkled, and in an instant he replied, "*will you? do it then: do it quick, for God's sake!!*" Previous to executing the promise, however, I determined to try the effect of the cold bath. He was immediately taken into the bathing room, stripped and made to sit down in the tub. He bore the effusion of seven or eight pails full of water from the pump* without stirring or complaining. He arose from the bath and commenced covering himself; but he dropped his clothes, and seized his lip. Thus, although for a few moments while he was in the bath, he was comparatively happy, yet he experienced no permanent relief; and when dressed, his horrors all returned. He was urged not to despair, for I was now ready to remove the insect preying upon his flesh. Accordingly, we proceeded to the cells of the maniacs, where, being seated, he fixed himself for the operation. I paraded six lancets on the table before him. By making a display of this and other preparations, and sending for assistance, he became composed, waiting with patience the result.

In the mean time I had sent in search for a worm. The person despatched for that purpose being unsuccessful, staid too long, and therefore I went in search of one myself. The worms or caterpillars which had infested the poplar-trees,† and created in New-York so much alarm on account of their supposed poison, were at that time very plenty.

* Temperature of the water about 54° of Farenheit.

† For Mitchill and Schenck's account of this terrible creature, see Med. Rep. vol. x. p. 98—100.

One of these had fallen from the tree by the door, where one end of it had been trodden upon, and the insect nearly killed. This worm I had seen previous to the patient's admission; and now, while he was anxiously waiting an operation, I ran and brought it in a minute. On returning, I found his uneasiness again commencing, but seeing me take the instrument, he fixed himself in the chair, and requested my assistants, (the apothecary and orderly-man,) to hold his hands, lest he should start while under the pain of the cutting instruments.

With a lancet the operation was commenced. I pricked his lip pretty smartly with it, which made him flinch a little; he accordingly leaned back his head firmly against the person who stood behind him, and shut his eyes tightly, and thus fixed, he bore the repeated pricks of the instrument with steadiness and fortitude. After pinching his lip with one hand, and wounding it with the other, I cut off a portion of the upper lip, which he had torn with his nails, and was pendulous. I now assured him that the operation was nearly completed, for the head of the worm could be seen. The by-standers cried out, "*there it is, there it is!*" he raised his eyes to see. He was cautioned to be still one moment longer, when again shutting his eyes, I gave him a severe pinch, and drew the edge of the lancet across the lacerated lip, and exclaiming, I have got him! opened my hand, and exposed the great worm.

The maniac arose from his seat, and gazed at the worm with astonishment beyond utterance. At length he spoke and requested me to preserve it; for, he observed with tranquillity, that his friends had said he was crazy, but this would be an evidence to the contrary. Crazy! said I, it would be enough to make any one crazy to have such a worm in his flesh: I shall preserve it because it is singular, never having seen the like before; and when you go home send your friends to me, and I will convince them, for you are no more crazy than I am. The result of this deceptive operation was a perfect cure; and this remarkable change

was effected in less than fifteen minutes after the patient entered the Hospital.

A general conversation now ensued, and the patient began to feel inconvenience from the swelling and soreness of his face and lips. He was invited to take some tea with bread and butter, which he swallowed with great satisfaction. Being thus composed, I inquired farther into the particulars of his case. The patient stated that he had been several days approaching to his late horrid condition, but was not constantly so wretched as he had been that day. A few days previous he was walking in the streets and saw an insect flying towards him in a line above his head: when approached within two feet of him he suddenly settled down and flew into his mouth, and there depositing an egg, made his escape. It was this egg which lay there some days, rendering him uneasy, but not distressed till it was transformed into a living worm, preying upon his flesh.

The next morning I visited him early and found him composed, though he informed me that I had left a portion of the worm behind in the operation of yesterday: but, said he, I put my finger in the hole last night and removed the shell in which the worm was enclosed, and now I am perfectly well and wish to go home. He was persuaded to remain a few days till the swelling of his face abated, and being removed from the cells to a sick ward, he shewed no signs of returning derangement during his continuance in the hospital; and after taking some cathartic medicine he was discharged, cured.

We find in the history of this case that the patient had obtained an obscure idea of the transformation which insects undergo in passing from the egg to the *larva* or caterpillar state, from that into the *chrysalis*, and then into the *imago* or perfect insect which first produced the egg. Where or how he procured this idea I am not informed, but he was in other respects an ignorant man, apart from his calling. The impression of this idea, which was probably new and unaccountable to him, might have been fixed in his mind, when on the 4th of July, (the national jubilee of

the United States,) he had indulged himself too freely in *devotion* to Bacchus. While in this state of excitement, a fly, a gnat, or some other insect might have entered his mouth, and hence the train of reasoning on that idea, produced the effects above related, by the increased flow of blood to the brain, and particularly that portion upon which the impression was first made.

"It is worthy of notice (says Dr. Rush) in all these cases of erroneous judgment, the patients reason correctly; that is, draw just inferences from their errors. Thus the Prince of Bourbon, when he supposed himself to be a plant, reasoned justly, when he insisted upon being watered. In a like manner the hypochondriac who supposes himself to be dead, reasons with the same correctness when he stretches his body and limbs upon a bed, or a board, and assumes the stillness and silence of the shroud." Thus, too, the patient in the case above related, reasoned properly upon an error. He passed over, however, the intermediate stage between the hatching of the egg, and its conversion into a chrysalis. The insect deposits its eggs upon a plant, a tree, or other substance capable of affording nourishment to its young, which when hatched are sometimes many days or weeks in acquiring their growth; they are then changed into the chrysaline state, and then, only, enveloped in a covering, and lay nearly torpid without locomotion. The patient confounded two states together, and supposed the larva to be confined in its chrysaline covering in his lip, and yet be actively feeding, which could not be the case.

SAMUEL AKERLY.

II.

On the Coloring Matter of the Black Bronchial Glands, and of the Black Spots of the Lungs. By George Pearson, M. D. F. R. S.

From the London Medical and Physical Journal, February, 1814.

In the adult human animal, the glands designated *bronchial*, are generally of a black or dark blue color. These organs, which are allowed to be lymphatic glands, as is well known, are situated at the root of the lungs externally, within cellular membrane, near the bifurcated trachea; as well as internally on or near the large branches of the bronchi.

At the age of about twenty years, the lungs have a mottled or marbled appearance, from black and dark blue spots, lines, and points disseminated immediately under the transparent pulmonary pleura. As hath been repeatedly observed, the lungs generally become more dark-colored proportionately to their age. Accordingly, at upwards of sixty-five or seventy years of life, they often appear almost uniformly black, from the number and congeries, or coalescence of the maculæ, points, and lines, just mentioned. Throughout the whole interior substance of the lungs, the black spots are seen in a great measure corresponding to the external appearance.

I do not find that any observations and experiments have been made to determine the nature or cause of the black color, above described, of the pulmonary organs. It is true, a conjecture has been proposed, that sooty matter taken in with the air, may be the occasion of the color of the lungs; and that the color of the glands is occasioned by a peculiar secretion. But the former conjecture has

been supposed to be satisfactorily refuted by the absence of the appearance in question among brute animals; as also by its presence in persons who breathe the air of the provinces at a great distance from towns, or places of great consumption of coal; and the latter conjecture is palpably erroneous, because the bronchial glands, of which I am speaking, are not organs of secretion, but of conveyance of lymph.

The course of investigation, in which I have long been engaged, to improve the pathology of pulmonary consumption, led me to some experiments and observations on the subject now stated, which I respectfully submit to the consideration of the Society.

After cutting away the cellular membrane surrounding the black glands, and washing them till the water was no longer colored, I subjected them to examination.

1. On pressure between the fingers, to burst the investing coat, a black fluid issued, which stained the skin, which rendered water black, and which did not alter in color, or apparently dissolve, even at a boiling temperature, either in water or in concentrated muriatic or nitric acids.

2. On breaking down the structure, and triturating in a glass mortar, a number of these glands with a small proportion of water, a thick black liquid was produced, which was decanted from off many membranous and fibrous masses. But after repeated affusions and trituration, I could not deprive these masses of their black color, although the water was at last scarcely tinged: it was only by dissolution in caustic potash lye, or in nitric and muriatic acids, that I could totally separate the black matter from the animal substance from which it seemingly adhered. After repose, a black sediment took place in the waters of elutriation, as well as from the alkaline, and the acid dissolution, which, on decantation and evaporation to dryness, afforded the deposit in the state of a black powder.

The texture and proportion of the tinging matter of the glands, was very different in different subjects, whether the lungs, to which they belonged, were in a healthy or dis-

eased condition. In persons of about eighteen to twenty years of age, some of the bronchial glands contained no tinging black matter at all, but were of a reddish color; others were streaked, or partially black; and others were quite black, or of a dark blue color.

3. By boiling the black glands in lye of caustic potash, their structure was destroyed, and a turbid black liquid was produced, from which, on standing during several days, a copious black sediment took place; but the liquid still remained black, after remaining at rest a month, much of the tinging matter continuing suspended. By dilution with water, this matter deposited in a clear liquid.

4. By liquid muriatic acid, of the specific gravity 1.170, the bronchial glands were dissolved at a boiling temperature, affording a turbid black liquor; but on repose, an abundant black deposit took place from a clear yellow liquid, as well as a quantity of the same matter appearing on its surface. On separating this precipitate, and evaporating to dryness, it became a black powder.

5. Nitric acid liquid, of the specific gravity 1.500, most speedily dissolved the substances under examination, affording a clear yellow liquid with abundance of black matter on its surface. The separation of this coal-like matter is effected most easily with this acid.

It may not be quite superfluous to mention, that from the bronchial glands, which were not at all colored with black matter, but were merely red, no black matter was separable by the above-mentioned acid and alkaline solvents.

I next examined the black and blue coloring substance of the surface and interior parts of the lungs.

1. A portion of the lungs, beautifully marked with a crowd of these colored areolæ, spots, points, and lines, after being washed till it no longer imparted a bloody tinge to water, still retained these appearances undiminished. On pressure of these colored parts between the fingers, the skin was sometimes stained of a black color.

2. On treating the substance of the lungs, abounding in the above-described black and blue parts, in the same man-

ner as the bronchial glands just related, with water, with liquid caustic potash, with muriatic and with nitric acids, similar phenomena, with specially the separation of black matter, was observed. The proportion, however, of this black substance was very much smaller to the animal matter dissolved, than in the former cases.

3. To show that the black matter is of the same kind in the differently figured black parts of the lungs, it may be worth while to relate a particular experiment.

A thin slice of about three inches square of the surface of lungs, exhibiting black lines, maculæ, and points under the transparent pleura, was put into a vessel containing three ounces measure of liquid nitric acid. On this it floated, but all of it was presently dissolved, except the colored parts, which retained their respective forms till the vessel was shaken: then they were destroyed, and afforded a coating or stratum of black matter on the surface.

Having collected an adequate quantity of the coloring matter in a powdery state, for examination, I performed a number of experiments, but it seems needless to relate more than a few decisive ones.

1. A little of the well exsiccated black powder being sprinkled upon fused nitrate of potash, deflagration took place as with charcoal of wood, or with soot.

2. The same phenomenon occurred with melted oxymuriate, or chlorite of potash, but at a much lower temperature.

3. The deflagration with nitrate of potash, and also with chlorite of potash, was produced, in a suitable glass vessel, to collect the compounded gas; which was received into lime water, and found to be charcoal acid.

4. A little of the black powder was very easily ignited upon a plate of platina, and was speedily burnt off, smelling like burning animal matter, and leaving a minute residue, sometimes of reddish powder, and at other times of white.

5. The powder was ignited in a green glass tube, closed at one end, and kept red hot from ten to fifteen minutes,

the open extremity being slightly stopt with a clay lute, to prevent the admission of air. A white vapor with water was discharged, and a minute portion of animal empyreumatic oil was condensed in the upper part of the tube. There remained, on cooling, a fine black powder, which in different trials lost 1-7 to 1-4; i. e. about 14-100 to 25-100 of the original weight of the substance.

6. On treating the coaly powder by exposing it to fire, and with the pneumatic apparatus, the products were always charcoal acid, hydro-carbonate gas, and much water, with generally a little empyreumatic oil, and sometimes a trace of prussic acid, leaving a residue varying in weight as just stated.

From the properties above manifested, I conceive I am entitled to declare the black matter, obtained from the bronchial glands, and from the lungs, to be animal charcoal in the uncombined state, i. e. not existing as a constituent ingredient of organized animal solids or fluids.

I mean by the term animal charcoal, what is popularly understood. Of course I do not mean pure charcoal. Such a state of this substance cannot here be reasonably expected, either from a consideration of the state of it, as inspired from the atmosphere, or from its necessary impregnation with animal matter during its long residence in the lungs. I imagine no person would hesitate to consider such a coaly substance as the present to be charcoal, if derived from other sources besides the animal economy; it being, as shown by the preceding experiments, a black, tasteless, infusible powder, indissoluble in muriatic acid, nitric acids, and perhaps all common acids, except the sulphuric, affording as large a proportion of charcoal acid, as animal and vegetable charcoal, which has been exsiccated at the same temperature, and equally resisting fire in close vessels.

For the purposes of physiology, a few theoretical remarks may, perhaps, be useful. I think the charcoal in the pulmonary organs, is introduced with the air in breathing. In the air, it is suspended in invisibly small particles,

derived from the burning of coal, wood, and other inflammable materials in common life. It is admitted that the oxygen of atmospherical air passes through the pulmonary air vesicles, or cells, into the system of blood-vessels; and it is not improbable, that, through the same channel, various matters contained in the air may be introduced. But it is highly reasonable to suppose that the particles of charcoal should be retained in the minutest ramifications of the air tubes, or even in the air vesicles, under various circumstances, to produce the colored appearances on the surface, and in the substance of the lungs, as above described. It must also be considered that innumerable absorbent lymphatic vessels take their rise in the bronchial tubes; for the lungs are more richly stored with lymphatic vessels than any other organ, excepting the liver. When I compared the black lines and black net-like figures, many of them pentagonal, on the surface of the lungs, with the plates of the lymphatic vessels by Cruikshank, Mascagni, and Fyffe, I found an exact resemblance: and when I found that these vessels contained charcoal, I judged that it was fair to infer, that the lymphatics of the lungs absorb a variety of very different substances, and especially this coaly matter, which they convey to the bronchial glands, and thus render them of a black or dark-blue color. Hereafter, among other enquiries, the color of the large trunks of the lymphatic vessels, just *before* they enter the bronchial glands, and just as they pass out of them, ought to be observed. Also the effect of the charcoal thus conveyed into the thoracic duct, or directly into the blood, by the lymphatics, from the black glands, is, I presume, worthy of attention.

According to this theory, we can account reasonably for the absence of the black color of the bronchial glands, and of the lungs in infants, in children, and even frequently in persons of eighteen or twenty years of age. For the same reason these appearances are seldom observed in any brute animal which has fallen under my observation. On a subject so novel, or at least so much neglected, as that on which I am writing, many facts are wanting to establish,

demonstratively, any theory which can be proposed; but I know of none, at this time, which are at variance with that I have ventured to offer.

George Street, Hanover-square,
June 13, 1813.

P. S.—Since my last communication to the Society, I have had an opportunity of making some further observations and experiments on this subject.

The lungs of an infant, who lived two days, were obligingly sent to me by my friend Mr. C. M. Clarke. I found the bronchial glands quite white, and the lungs appeared externally of an uniform reddish color. The pulmonary organs of a girl fifteen years old, I found rather thickly mottled, but the bronchial glands were only tinged on their surface, and did not yield one-fourth of a grain of coaly powder. In two other females also, aged nearly fifteen years, who died of pulmonary consumption, the lungs were not at all marbled, but some of the bronchial glands were tinged black, and others were white. The lungs of two men, the victims of pulmonary phthisis, at the age of twenty-one years, exhibited thinly, black spots, streaks, and areolæ, with many of the glands in question of a deep-blue color. A woman's lungs, thirty-one years of age, were found studded beautifully with black spots and lines, the bronchial glands being all either blackish or blue. In no instance have I observed the lungs and glands, here spoken of, so black, and from which I separated so much charcoal, as in those of a person forty-two years old, whose death was occasioned by a most extensively-diffused tubercles, many vomicæ, and a considerable condensation of the pulmonary organs. I now recollect that this subject had been a smoker of tobacco. generally several times, but always once a day, perhaps more than twenty years. Future observations must determine more satisfactorily the state of the pulmonary organs, according to the impregnation of the air with sooty vapors. If, hereafter, it be shown that the lungs of persons living remote from sources of such vapors, are still

greatly impregnated with coaly matter the just conclusion can only be, that such matter is more extensively diffused through the atmosphere than is apprehended. This being the fact, it would also afford a proof that it is only the invisible small particles which are absorbed, for the larger particles remain unabsorbed, entangled in the mucus lining the air vessels, and never get farther, but are rejected from time to time by expectoration. Accordingly, in a morning, healthy people, after the night's rest, very commonly hawk up mucous matter of a bluish color with black streaks, owing to charcoal; and persons in a diseased state, especially by great exertions in coughing, frequently expectorate matter spotted and streaked with black particles. The quantity of coaly matter in the pulmonary organs is not entirely according to the age, for I was disappointed on finding the lungs and glands in a woman of seventy-five years of age, in London, not more deeply colored than is usual at the age of fifty. At present I am unable to state any connexion between certain diseases, and the presence of coaly matter.

Farther investigation has shown, that this coaly matter does exist in domesticated brute animals; but as they die, or are killed generally before they attain to twenty years, or even fifteen years of age, the organs in question are seldom seen blackened. However in diseased conditions, the cases are not according to this rule. With the approbation of Professor Colman and Mr. Sewel, several of the worthy students of the Veterinary College have frequently obliged me by furnishing, for my examination, the lungs of horses and asses. In general the bronchial glands were merely white, or reddish; but now and then they were partially black. In one instance of an ass, only six months old, these glands were black from coaly matter; but the lungs were uniformly red. The animal had died of peripneumony. In no instance have I seen, in any brute creature, the lungs marbled and streaked with black lines as in the human. There is seldom an opportunity of inspecting horses which die from their natural age, viz. of thirty to forty years; for I am in-

formed they mostly die or are killed in London before they are fifteen or sixteen years old. I have not seen coaly matter in the lungs or glands of the ox kind, sheep, and hogs. The black appearances produced by distended blood-vessels and by ecchymosis, should be recollected, to avoid the error of ascribing them to charcoal. The absence of this matter in human creatures, at the ages just mentioned, when animals are slaughtered or die, affords a proof, although not a decisive one, that the exemption is more reasonably ascribable to the circumstance of time, and living in the open air, than to the peculiarity of the economy of each species of live being. Consistently with this observation, in the instance of a cat, known to have lived in Mr. Thomas's family at least eighteen years, the bronchial glands were quite black from coaly matter, and the lungs were uniformly red; but in all other examinations of much younger cats, I found these glands either white or red.

The blackness of the lungs from charcoal remains, although hæmorrhage to occasion death has occurred. It is not removable by ablution, or maceration in water, nor by acids, nor alkalies, nor by the early stages of putrefaction. I have not met with a similar coaly substance in any parts of the animal economy except the lungs. The glands of the mesocolon are sometimes black, similarly to the bronchial; but the colour soon disappears on immersion in nitric or muriatic acids, no charcoal being separable. The black, or more truly the dark brown tinging liquid of the sepia, I have ascertained by experiments, does not contain uncombined charcoal; this matter existing there only as a constituent ingredient of animal matter.

As I have represented, it is conceived that the coaly matter is very slowly absorbed by the mouths of the lymphatic vessels in the innumerable air tubes and cells.

To determine whether or not this matter exists in these lymphatic vessels, and is the occasion of the black maculæ, streaks, and areolæ, or marbled appearance of the surface of the lungs, I entreated Mr. Wharrie, of St. George's Hospital, whom I knew to be a skilful anatomist, to inject these vessels

with quicksilver. In some trials, the injection passed without interruption, in the usual manner; but in others it was apparently obstructed, by meeting with the black lines on the surface. Mr. George Ewbank also, at my desire, very dextrously dissected out about one inch in length of one of these black lines, supposed to be a lymphatic vessel. Being put into a glass capsule, full of nitric acid, the black line immediately was contracted in all its dimensions; but it retained its form after digestion, for several days, at a high temperature: afterwards, on gently shaking the capsule, the black line was broken into a number of indissoluble particles. In the interior of the lungs, it is not unusual to see black spots in the middle of tubercles, although the substances consist apparently of self coagulated lymph probably secreted in the cellular substance, and therefore very likely to envelope the coaly matter in the air tubes by the coalescence of numerous minute tubercles.

It has been objected, that the nitric acid may develope the constituent or combined ingredient charcoal of all animal substances, and consequently no proof will be thereby afforded of this matter being extraneous; but on many trials, I have never by this means obtained charcoal from any animal mucilage.

I have no reason to believe that any of the coaly matter under investigation is dissolved by this acid, for on distilling a pint measure of it from ten grains of the black powder of the bronchial glands, there was no sensible diminution of it, whether it was so treated before ignition, or subsequently: on evaporation to dryness, nitric acid, in which the coaly matter had been boiled, afforded no black sediment. Hence, I conceive that this menstruum may be employed to determine more accurately and speedily, the proportion of the coaly matter, than any other agent. Sulphuric acid does dissolve a certain portion of this charcoal, affording a transparent liquid, even on dilution with water. *Phil. Trans. Part. II. for* 1813.

III.

A new method of Resuscitating Still-Born Children. By Dr. Gilbert Smith, Physician and Surgeon to the New-York Alms House, &c.

Communicated in a Letter to the Editors of the N. Y. Med. Mag.

Gentlemen,

As we too often experience the mortification of witnessing the total inefficacy of the most persevering and well-directed efforts for the recovery of still-born children, any attempts to add to the stock of means which have been found useful, I think must not be unacceptable to the public. If the method which I have accidentally adopted in the first instance, and which my subsequent experience, as far as it has gone, would seem to warrant, should not have been hitherto employed, I feel a confident persuasion that whoever will give it a trial will not be dissatisfied with the result. The following case will, I think, be sufficient to prove its efficacy.

About three years since I was called upon to attend a lady with her first child; it being a breech presentation, the labor was of course tedious, and the head was retained such an unusual length of time after the body was delivered, that, apprehending the most serious consequences, I directed a warm bath to be in readiness, into which the child was placed immediately after delivery. At this time there was no pulsation in the chord, or the smallest sign of life. Its legs and spine were frequently rubbed with stimulating applications, while I was assiduously employed in endeavoring to excite action in the lungs by breathing into them, and pressing out the air alternately. This process was continued

for the unprecedented period of two hours, when my strength failing, I was upon the point of discontinuing any farther effort as useless; when one of the attendants, by whose importunity I was, perhaps, induced to persevere for such a length of time, proposed my taking some refreshment, and handed me a glass of brandy and water; after having drank, I resumed my labors, when the idea forcibly struck me, that the alcohol might be volatilized by the heat of the mouth, and breathed into the lungs. I immediately called for some brandy undiluted, held it sometime in my mouth, and again inflated the lungs; shortly after which I had the inexpressible satisfaction of perceiving unequivocal signs of returning life, which increased until the child was restored. Since which period I have had occasion to employ it in three instances only: two of the three were restored immediately on the application of the stimulus upon the lungs.

One of these cases was a little remarkable;—the child, although born with all the signs of perfect health and vigor, after a very natural labor, without any apparent cause, suddenly put on the appearance of dissolution; but was instantly restored as soon as the lungs were inflated in the manner above mentioned.

GILBERT SMITH.

IV.

Cases of Rabies in Dogs; by Mr. Youatt.

From the London Medical and Physical Journal, March, 1814.

The practitioners of the veterinary art owe much to the liberality of the teachers of human medicine. They are, fortunately, enabled, in some imperfect degree, to repay the obligation by the superior advantages which their pre-

fession gives them for the study of comparative anatomy and physiology.

In no respect can they contribute more essentially to the perfection of medical science, than by the light which their experience enables them to throw on the history of Rabies Canina; a disease yet involved in much obscurity, and the cure, or even alleviation of which, is a desideratum in the art.

To my partner, Mr. Blaine, the medical world is indebted for the only detailed and correct account of the symptoms of rabies in dogs, (with the exception, indeed, of Mr. Meynell, Medical Commentaries, vol. xix. p. 90.) and from him a late writer on the bite of a rabid animal has unblushingly borrowed the most valuable part of his essay, though he had not the candor to acknowledge or even glance at his obligation.

The enclosed history of some cases of rabies canina, which occurred in my practice during the last year, is transmitted to you, as a very humble contribution to the knowledge of this dreadful malady. They are selected from many others, as clear and decisive in themselves; and each of them is marked by distinct and characteristic symptoms.

Case I.—January 18th, 1813.—Mr. G.'s terrier yesterday quarrelled with and bit another dog, with which he had been always friendly.

19th.—Having been costive two days, his master gave him some castor oil. In effecting this he was severely bitten. Alarmed at a ferocity which he had never before observed in the animal, Mr. G. sent for my partner, Mr. Blaine. The dog snapped at a stick, and shook it, but not without being a little teased. He howled frequently, with his head lifted up, but much of the bark was mixed with the howl. His head frequently drooped, and his eyes closed; he then suddenly started, lifted up his head, and howled.

20th.—To-day I saw him. He was busily employed in drawing the straw from his kennel, and shaking it violently. He instantly, and ferociously, flew at a stick. The howl was perfectly characteristic. He had lapped his urine, and

had gnawed away his penis considerably below the glans. He yet knew his master's voice, and was obedient to his call. He eagerly lapped milk and water, and readily swallowed it.

At Mr. G.'s request he was immediately destroyed.

The trachea and œsophagus exhibited no morbid appearance. The stomach was very highly and generally inflamed, and completely filled with hair and straw. Several patches of inflammation were seen on the lungs. The diaphragm in some parts was livid. The duodenum and jejunum were violently inflamed, but the inflammation was lost in the ileum. The dog which was bitten by him rabid five weeks after.

Case II.—March 3d.—Mr. L.'s terrier, very gentle and docile, had been two days costive and dull, and had obstinately refused all food. He now became suddenly furious, gnawed his kennel to pieces, and in the violence of his efforts broke all his incisor teeth. In the intervals of his violence his head drooped, and his eyes closed for a moment; he then suddenly sprang up, and recommenced his attack on the kennel.

4th.—His strength was much exhausted. His eyes had lost their ferocity, and had a dull greenish appearance. The sight of one eye was gone. The breathing laborious, with a peculiar choking noise. Eagerly seized his meat, carried it to his kennel and laid on it. On giving him water in a shallow dish, he first lapped it eagerly, and then deliberately laid across it, burying his chest in it. Doubting whether this might not be accidental, he was rouzed, and the pan was removed to a little distance, yet within his reach: he immediately went and again laid across the water, immersing his chest in it. The water was then taken away, and soon after he eagerly scraped all his straw into a heap, and lay across it with his stomach resting upon it. He yet knew and fondled on his master. In the evening he died. He at no time gave the characteristic howl.

On opening the head, the longitudinal sinus and the vessels of the coats of the brain were beautifully turgid. The

substance of the brain was reddish. No fluid in the ventricles. The pharynx and larynx were unaffected. The mucous membrane of the trachea was slightly, and the lungs were violently inflamed. Large patches, not spots, of inflammation appeared on the villous coat of the stomach. A considerable quantity of indigesta was contained in the stomach. The duodenum and jejunum were much inflamed, but the inflammation ceased in the ileum.

Case III.—August 7th.—A terrier, usually very gentle, was observed to be irritable and fretful; almost incessantly employed in hunting flies, except that for a moment his head suddenly drooped, and his eyes closed.

8th.—In the morning he seized his mistress' hand, and mumbled it, pretending to bite. He repeatedly did the same with her feet. The servant could scarcely drive him from *her* feet. He lapped eagerly, and took his food readily, but dropped it. In the afternoon he bit the gardener, and then fell furiously on the cat, and almost worried her to death. Had been costive three days.

9th.—To-day I first saw him. He was employed in tearing his bed and kennel to pieces, with strange diligence. Thirst excessive. Plunged his whole face in the water, yet could not swallow. His eyes were fierce. He flew furiously at a stick. His bark not changed. On my deciding that he was rabid, his master immediately shot him. The larynx, pharynx, trachea, and œsophagus were unaffected; but the left lung was slightly inflamed. The cardiac portion of the stomach was slightly inflamed, and distended with hair, leaves, straw, &c. The intestines were not affected.

Case IV.—October 4th.—Mrs. M.'s pug had for the last three days been unusually peevish. To-day he flew at his mistress, without provocation, though he had before been much attached to her. He then worried the cat, ran away, was seen to bite several dogs, and did not return until the next morning.

5th.—He was shut up in the wash-house, and meat and water were given him. He was not heard to bark or howl;

but he gnawed the doors and windows to an extent that appeared almost incredible.

6th.—To-day I saw him. His meat was untouched, but the water all gone. He had lost all inclination to bite. I could not provoke him to bite. Staggered every moment, and towards evening was quite paralytic in his hind limbs. Purged violently. Knew his mistress, and was eager to be caressed. Died in the night. No howl.

The pharynx, larynx, œsophagus, trachea, and lungs unaffected. The stomach generally and highly inflamed, and quite empty. The intestines much inflamed, and considerably thickened through their whole extent.

Case V.—October 9th.—A terrier had for two days been unable to shut his mouth; had appeared eager to eat, but after many ineffectual attempts, dropped his meat. Imagining it to be a sore throat, the servants had given him several medicines, and two of them had scratched their hands against his teeth. The disorder apparently increasing, I was sent for. The lower jaw was completely paralytic. The tongue hung out, and was of a leaden colour. The thirst extreme. Buried his nose in the water, but could not swallow. Flew furiously at me, but was unable to bite. A stick enraged him violently. Seemed to watch some imaginary objects in the air, and attempted to snap at them. Staggered as he walked. The head heavy, and eyes frequently closing. Knew the servants, and was obedient to them. Made no attempt to bite a dog which had been his companion. No howl.

Contrary to my request, he was immediately destroyed. The tongue was swollen, and of a leaden color at the tip. The stomach was empty. The fauces inflamed and swollen. The trachea and lungs unaffected. The vessels of its outer coat were very turgid. The villous coat was highly and generally inflamed, with spots of a deeper color. The bowels inflamed through their whole extent, and almost gangrenous in some parts.

Case VI.—October 17th.—Mrs. —— found a great

quantity of blood in the bed of her white terrier, which evidently came from him, and was supposed to be vomited.

18th.—Very dull, and refused to eat; with much oppression of the head; was contented only when he could lay his head on his mistress's foot, a thing which he had never done before.

19th.—His lower jaw became slightly dependent. He now took some food, and after many ineffectual attempts, and frequently dropping it, swallowed it; lapped eagerly, plunging the whole of his face into the water; quarrelled with a cat, of which he had been very fond.

20th.—To day I saw him. The lower jaw was paralyzed; the tongue hanging out, and of a leaden hue; the eyes glazed, and of the color of a green glass bottle. He staggered as he walked, and repeatedly fell. Watched some imaginary floating objects, and attempted to snap at them; the eye-lids frequently closing. The breathing was laborious, with a deep choaking noise. He was restless. He knew his mistress, fawned at her feet; attempted to lick my hand on patting him. No howl.

21st.—The deep choaking noise had gradually increased till noon, when he died. He had been unable to crawl from his bed since last evening, but was sensible to caresses until the last moment. Ten minutes before he died, he faintly wagged his tail when his mistress called to him.

The tongue was swollen and livid; the pharynx and larynx were inflamed; and the ramifications of the distended vessels of the trachea were very beautiful; the left lobe of the lungs highly inflamed, but the right lung scarcely affected; the whole of the villous coat of the stomach was highly inflamed, with the exception of a few spots which retained their natural color, and the pyloric orifice choked with straw; the parieties of the duodenum and jejunum were thickened; the mucous coat inflamed, but the inflammation gradually subsided, and was lost in the colon.

tremities similar, discolored. A fluctuating tumor appeared on the head, two inches from the incision in the eye-lid, which was opened, and discharged the same sort of matter as the other had; the two communicated under the scalp. It was hoped that the disease might prove an erysipelatous affection, terminating in a general suppuration under the scalp, and a sloughing of its tendinous aponeurosis. The pil. hydrarg. were discontinued, and yeast and water administered every hour.

June 17. Our patient remained much as before; his delirium constant, but never very violent; his pulse retaining its peculiar character; his tongue white as far as could be seen, but he did not understand us when we desired him to show it. The febrile symptoms had at no period run high, and were irregular. His strength had not failed, his appetite had been moderate, and bowels sufficiently regular. At 11 A. M. his breathing became difficult; his pulse and strength sunk rapidly, the former retaining, however, its peculiar quickness. At half past 9, P. M. he died,—ten days from the attack.

In the course of the disease, I learnt that my patient, for five or six years, had been subject to an affection of the head, of which he often complained, but of which I could learn no farther particulars, than that it was attended with dizziness, and relieved by a discharge of "clots of matter" from the nose.

The head was examined ten hours after death. The integuments were much thickened by effusion into their cellular substance, the fluid exhibiting the same yellow tinge as the surface of the skin.

From under the dura-mater, upon the left hemisphere of the brain, about two ounces of a bright straw-colored fluid were evacuated. The dura-mater itself exhibited no marks of disease, but the left pia-mater (or rather arachnoides) was thickened and irregular on its surface, as if studded with lymph, and besides the fluid mentioned, a small part of its surface superiorly was covered with real pus. The cortical substance of the brain, under the diseased pia-mater,

was of a dull blue, or livid color. These diseased appearances were only on the superior lateral part of the left hemisphere, they did not reach the occiput, the basis, or the right side. The veins of the pia-mater, generally, were turgid with blood. The divided vessels within the brain oozed blood freely. No other disease was visible in either the cerebrum or cerebellum. The bone was no where affected, the internal surface of the orbitar plate of the os frontis, and the frontal sinus of the left side, were examined, and found free from disease.

After the depleting plan first pursued proved unsuccessful, it was very difficult to discover a single rational indication of cure. The most remarkable symptoms were the state of the pulse and tongue. These, though they led at first to the suspicion of an inflammatory disease, yet afterwards denoted, plainly enough, the existence of some violent irritation, probably internal. But when it is considered that there was no delirium at first, nor phrenitis, nor intolerance of light at any period, and that there was much external disease, it must be evident that no decided indications of practice could be formed. And if the symptoms were perplexing at first, they were not less so afterwards, when delirium might be attributed to the erysipelatous affection.*

It is impossible to determine whether the affection of the brain, or that within the orbit, was the primary disease. Their situations were not correspondent, for the fluid on the brain was effused at the lateral and superior part of the hemisphere, while the basis of its anterior lobe, lying on the orbitar plate of the os frontis (contiguous to which was the external disease), remained sound. From this circumstance also, had the presence of matter been presumed, and its evacuation deemed necessary, it is evident we should have been deceived had we considered the external abscess as a guide to the internal effusion.

* The swelling of the left eye and eye-lid was doubtless owing to that partial resolution of inflammation which accompanies suppuration. The tumefaction of the right eye-lid and eye was probably sympathetic.

V.

Case of Disease in the Head, with the appearances after Death. *By* HENRY U. ONDERDONK, *M. D.*

Read before the Medical Society of the County of New-York, July 5th, 1814.

The following case, from its peculiar and perplexing symptoms, and the appearances on dissection, will not, I trust, be found unworthy the attention of the society.

June 8th, 1814. Charles Jeffry, aged about 30, by occupation a fisherman, complained of a pain just above the inner corner of the left eye, which he first perceived the day before. He described it as deep-seated, and there was no external mark of inflammation. His eye not unusually sensible to light; his mind apparently undisturbed; his tongue very white; pulse full, corded, and quick, of a very peculiar feel. The heat of his skin was but little increased. He had received no mechanical injury, but thought he had "taken cold" a week or ten days before, while occupied in removing the stakes used in the shad fishery.

He was bled to 16 oz. and took a cathartic powder of jalap and calomel. In the afternoon, his pulse continuing the same as before, he was again bled to 18oz. (ad deliquium), and as the powder had not operated, more calomel was given at bed time; a blister was also applied to the forehead.

June 9. His pulse, which was reduced but little after the blood-letting, had now risen to its former standard. His left eye-lid was somewhat swoln, apparently from œdema, and the adnata much tumefied, but there was no intolerance of light. The tongue as white as before; but the pain over the eye nearly gone. This subsidence of pain seemed to indicate a change in the disease, which was confirmed in the course of the day by one or two slight chills;

and on these accounts I did not venture on any farther depletion, except a dose of sulph. sod. to quicken the operation of the former medicines. In the evening, a blister was applied behind the ear.

June 10. I scarified the adnata of the left eye,—it discharged only a little bloody serum. The right eye-lid began to swell, but there was no intolerance of light in either eye. He complained of little or no pain. This day for the first he was occasionally delirious. Several smart rigors were noticed.

June 11. The adnata of the right eye began to swell, but the tumefaction was nearly colorless. There was not the least intolerance of light, and both corneæ remained clear. The integuments about the left eye and temple were slightly œdematous. Delirium continued at intervals, but without fierceness; his pulse and tongue the same as on the first day. Dr. Kissam saw him in consultation, and it was agreed to open the temporal artery, but *its* pulsations were very feeble, and not more than an ounce of blood was obtained. A blister was also applied to the back of the neck.

June 12. A prominence appeared upon the left upper eye-lid, which fluctuated indistinctly,—to this a poultice was applied. Other symptoms as before.

June 13. The abscess was opened, and discharged almost offensive dark-colored pus, and its cavity extended into the orbit. As the right eye-lid was more tense, a poultice was applied to it; but it did not afterwards suppurate. The delirium was constant, pulse and tongue as at the commencement of the disease. The integuments of the forehead, temple, and neck, were more swelled, and had a slight erysipelatous appearance.

June 14. Symptoms generally as before. Fearing some internal organic disease, the pil. hydrarg. were administered, two three times a day.

June 15. The scalp had a puffy feel generally on the left side. The integuments of the head and chest were tinged of a yellow hue.

June 16. Yellowness of the breast deeper, and the ex-

tremities similar, discolored. A fluctuating tumor appeared on the head, two inches from the incision in the eye-lid, which was opened, and discharged the same sort of matter as the other had; the two communicated under the scalp. It was hoped that the disease might prove an erysipelatous affection, terminating in a general suppuration under the scalp, and a sloughing of its tendinous aponeurosis. The pil. hydrarg. were discontinued, and yeast and water administered every hour.

June 17. Our patient remained much as before; his delirium constant, but never very violent; his pulse retaining its peculiar character; his tongue white as far as could be seen, but he did not understand us when we desired him to show it. The febrile symptoms had at no period run high, and were irregular. His strength had not failed, his appetite had been moderate, and bowels sufficiently regular. At 11 A. M. his breathing became difficult; his pulse and strength sunk rapidly, the former retaining, however, its peculiar quickness. At half past 9, P. M. he died,—ten days from the attack.

In the course of the disease, I learnt that my patient, for five or six years, had been subject to an affection of the head, of which he often complained, but of which I could learn no farther particulars, than that it was attended with dizziness, and relieved by a discharge of "clots of matter" from the nose.

The head was examined ten hours after death. The integuments were much thickened by effusion into their cellular substance, the fluid exhibiting the same yellow tinge as the surface of the skin.

From under the dura-mater, upon the left hemisphere of the brain, about two ounces of a bright straw-colored fluid were evacuated. The dura-mater itself exhibited no marks of disease, but the left pia-mater (or rather arachnoides) was thickened and irregular on its surface, as if studded with lymph, and besides the fluid mentioned, a small part of its surface superiorly was covered with real pus. The cortical substance of the brain, under the diseased pia-mater,

was of a dull blue, or livid color. These diseased appearances were only on the superior lateral part of the left hemisphere, they did not reach the occiput, the basis, or the right side. The veins of the pia-mater, generally, were turgid with blood. The divided vessels within the brain oozed blood freely. No other disease was visible in either the cerebrum or cerebellum. The bone was no where affected, the internal surface of the orbitar plate of the os frontis, and the frontal sinus of the left side, were examined, and found free from disease.

After the depleting plan first pursued proved unsuccessful, it was very difficult to discover a single rational indication of cure. The most remarkable symptoms were the state of the pulse and tongue. These, though they led at first to the suspicion of an inflammatory disease, yet afterwards denoted, plainly enough, the existence of some violent irritation, probably internal. But when it is considered that there was no delirium at first, nor phrenitis, nor intolerance of light at any period, and that there was much external disease, it must be evident that no decided indications of practice could be formed. And if the symptoms were perplexing at first, they were not less so afterwards, when delirium might be attributed to the erysipelatous affection.*

It is impossible to determine whether the affection of the brain, or that within the orbit, was the primary disease. Their situations were not correspondent, for the fluid on the brain was effused at the lateral and superior part of the hemisphere, while the basis of its anterior lobe, lying on the orbitar plate of the os frontis (contiguous to which was the external disease), remained sound. From this circumstance also, had the presence of matter been presumed, and its evacuation deemed necessary, it is evident we should have been deceived had we considered the external abscess as a guide to the internal effusion.

* The swelling of the left eye and eye-lid was doubtless owing to that partial resolution of inflammation which accompanies suppuration. The tumefaction of the right eye-lid and eye was probably sympathetic.

So far as one case may afford a practical hint, we may learn from the above, that a full, tense, quick, and somewhat frequent pulse, and white tongue, both remaining nearly unaffected by depletions, and unconnected with any general inflammatory symptoms, denote the presence of some irritating cause, probably upon the brain. I have used the term *irritation*, to distinguish this affection from that apoplectic state, with a slow pulse, and stertorous breathing, which is ordinarily produced by effusion of pus upon the dura-mater. Whether the cause of this irritation was the inflamed condition of the surface of the brain, I shall not venture to decide.

It appears also from this case, that inflammation of the pia-mater does not produce phrenitis. That it should arise from inflammation of the dura-mater, which is less connected with the brain, is a singular fact, and will doubtless afford a subject of speculation for the ingenious.

VI.

On the use of Charcoal-Powder, as a substitute for Cinchona.

By R. CALVERT, *Physician to the Forces, Palermo.*

From the Edinburgh Medical and Surgical Journal, January, 1814.

A physician to the Sicilian hospital at Palermo, having hinted to me, that he had prescribed the powder of charcoal in a case of intermittent fever with success, and recollecting myself that burnt rags, soot, and similar substances, have sometimes succeeded in curing agues in England, I determined to try the effects of charcoal in an obstinate case of ague in my hospital. Finding it succeeded in that instance, I have continued to employ it in a variety of other cases. And, was I permitted to form a judgment of its virtues after the short but active period in which I have

used it, I should declare it equal, if not superior to Peruvian bark. I subjoin the original case of Dr. Calcagno, the Sicilian physician, wherein sulphuric acid was given, with an idea of liberating carbonic acid, or some antiseptic principle which he thought the charcoal contained. As I was not aware of any such principle to be liberated by the combination, I omitted the acid entirely, and without disadvantage, as will be seen in the second case, which was also the next in order of the cases in which charcoal was employed at this place.

The general effects of this substance seem to be, to take away bitter and disagreeable tastes in the mouth; to allay sickness, wherever there is a tendency to vomit, and sometimes to stop the vomiting, when it has occurred; to promote appetite, and assist digestion. It has some tendency, however, to constipate the bowels; but it neither produces griping nor any other unpleasant symptom. In one instance, indeed, where I prescribed it, immediately after the bloody evacuations had ceased in a dysentery of a week's standing, it appeared to prevent the recurrence of that disorder. In any species of fever, after the natural evacuations by the skin and kidneys have been restored, it appears to preserve them in that state, and prevent the fresh accession of fever.* Whether or not the carbon finds its way into the mass of blood, I will not attempt to decide, but certain it is, that the lips soon lose that milky opaque appearance, so common in intermittents, and gain a deep redness, while the skin is very soon tinged with the colouring matter, if it may be so called, of the carbon. These two last effects, however, soon go off when the remedy is discontinued.

Should further experience confirm the efficacy of this plentiful, cheap, and well known substance, so as to render it a common substitute for Peruvian bark, it will cause a considerable saving to government. But the greatest advantage will be felt amongst the poor.

I have paid no attention to the particular wood from

* Might it not have a good effect, during the remissions in the plague?

which the charcoal is obtained; the only selection I have made being of the best charred pieces.

The most convenient mode of administering it is in the form of bolus, folded in a wafer made of flour, after dipping it in water, as is commonly practised in Roman Catholic countries.

I am, Sir, your most obedient servant,

R. CALVERT, Physician to the Forces.

CASE I. (*Translated from the original Italian.*)

On the 5th July, a young man named GIACHINO COLUMBA, from Cessalu, aged 20, was admitted into this great hospital; by profession a seaman, of a sanguineous temperament, and tolerably well fed. He had been affected three days with a fever, that assailed him every day towards two o'clock P. M. with a sensation of cold, and that afterwards terminated towards morning with a little perspiration, leaving him free from all those troublesome symptoms, such as thirst, headach, and excessive heat, which tormented him during the course of the paroxysm. He assigned no other cause for his complaint than his employment; but said, that a few days before, he lived on the shore of Caronia, near a rivulet*. A vomit was immediately prepared of two grains of tartar-emetic, with a drachm of *aceti-to-ammoniacale*, (acetite of ammonia.) He vomited a quantity of mucous yellow matter. When visited after dinner, the fever was upon him, the cold stage of which, he said, came on at two o'clock as usual. Decoction of elder flowers; broth, but no food.

6th, In the morning.—Apyrexia. Decoction of camomile; half diet. Fever at 12 o'clock; after dinner the fever continued. Decoction of elder flowers; broth, without food.

He was ordered the powder of charcoal in the dose of a scruple every two hours. To drink after it four ounces of water, acidulated with sulphuric acid; to begin at six o'clock in the morning.

* A situation in Sicily, peculiarly subject to intermittent fevers.

7th, In the morning.—Apyrexia; at 12 o'clock fever. The charcoal was suspended; broth, without solid food. After dinner the fever continued; decoction of elder flowers; broth. At 10 o'clock P. M. powder of charcoal and water acidulated, every two hours, as above.

8th, In the morning.—Apyrexia. Continued the charcoal; half diet, with wine. At 2 o'clock P. M. fever; water, broth, decoction of elder flowers. At 10 o'clock the usual powder, in the dose and manner as above.

9th, In the morning.—Apyrexia; half diet, with wine; after dinner, apyrexia, two doses of the powder, as above; diet with wine and an egg.

10th, In the morning.—Apyrexia; meat and full diet; two doses of charcoal, as above. After dinner, apyrexia; two doses of charcoal as above; diet, an egg, wine.

11th, In the morning.—Apyrexia; two doses of charcoal; meat. After dinner discharged from the hospital perfectly well.

(Signed) FRANCISCO CALCAGNO.

CASE II.—JOHN GRAHAM, private 20th, Light Dragoons, æt. 45, melancholic temperament, was first attacked with a tertian fever about twelve months ago, when quartered near the *Mole* at Palermo, but not a great while after leaving the *Stradone*, a place notorious for producing remittent and intermittent fevers. He states, that he remained about three months in the hospital of the 3d Battalion King's German Legion, during which time he took a considerable quantity of bark; that in a few days after his discharge, the fever returned, though in a slighter degree, and has hung about him every since; that he was admitted into the detachment hospital about three months ago, laboring under an inflammation of the intestines, which caused him to lose a considerable quantity of blood (about 90 ounces); that he recovered and was discharged.

On the 14th June last he was re-admitted with a gonorrhœ and swelled testicles. These complaints had nearly disappeared, when on the 16th July, during the morning visit, he was seized with a very strong paroxysm of the ague. Its

violence was somewhat interrupted by a dose of opium and the pediluvium. The paroxysm being over, he began to take a drachm of the powder of bark every three hours; low diet, four ounces maccaroni.

17th.—No paroxysm. Continuetur cinchona lancifolia.

18th.—Had a return of the paroxysm at 11 o'clock A. M. with its usual violence. Absente febre, repetatur cinchona lancifolia, ut antea.

19th.—No paroxysm. Continuetur cinchona.

20th.—He took three drachms of bark yesterday, but there being no more in the hospital, he did not get any this morning. At 11 o'clock the paroxysm returned as before. Sumat pulveris carbonis 20 gr. secunda quaque hora.

21st.—No paroxysm. Continuetur pulvis carbonis.

22d.—No paroxysm. Continuetur pulvis carbonis.

23d.—As yesterday. Continuetur pulvis carbonis.

24th.—Continues well. Omittatur pulvis carbonis. Half diet.

27th.—While talking this morning respecting his case, at 11 *o'clock precisely*, the colour was observed suddenly to leave his face, and, when asked what was the matter with him, he said he felt a chillness down his back, as if the fever was about to attack him. He instantly took a scruple of the charcoal powder with a grain of opium, and the sensation went away. Sumat pulveris carbonis 20 gr. ter in die.

August 1st.—Free from complaint. Omitt. pulvis.

Palermo, 1st August, 1813.

VII.

Experiments and Observations on the influence of the Nerves of the Eighth Pair on the Secretions of the Stomach. By B. C. Brodie, Esq. *F. R. S. Communicated by the Society for the promotion of Animal Chemistry. Read before the Royal Society, February* 10*th*, 1814.

From the London Med. Surg. and Pharmaceut. Rep. October, 1814.

In a paper formerly communicated to this society by Sir Everard Home, and since published in the Philosophical Transactions for the year 1809, some facts were stated, which render it probable that the various animal secretions are dependent on the influence of the nervous system; and this opinion seemed to derive support from some physiological experiments which were afterwards instituted by myself, and in which it was observed, that after the functions of the brain had been destroyed, although the action of the heart continued and the circulation of the blood was maintained as under ordinary circumstances, the secreting organs invariably ceased to perform their office.

It has been attempted by former physiologists to determine how far the nerves are necessary to secretion; but there are considerable obstacles in the way of this inquiry; and no observations, that have been hitherto made, appear to throw a great deal of light on the subject. The only method which can be devised of ascertaining, by direct experiment, whether the nerves are really necessary to secretion, is that of dividing the nervous branches by which the glands are supplied.

But this, with respect to the greater number of glands, is an experiment impossible to perform; and, with respect to others, cannot be executed without so much disturbance

and injury to the other parts, as must render it extremely difficult to arrive at any positive results. Perhaps in future investigations some circumstances may arise, which will enable us to determine more satisfactorily this important physiological question.

In the meantime, as the labors of physiologists have hitherto contributed so little to this purpose, any facts that tend to its elucidation may deserve to be recorded; and I am therefore induced to lay before the society the following experiments, which afford one example of a secretion being dependent on the influence of the nerves.

The stomach derives its nerves principally from those of the eighth pair, or the par vagum; and the same nerves, as they assist in the formation of the semilunar ganglions, contribute to the supply of the rest of the alimentary canal, particularly of the small intestines. In an inquiry which I had formerly instituted, respecting the functions of the stomach, I divided these nerves in the neck of a dog, for the purpose of ascertaining the influence which they possess on the secretion of the gastric juice; but I was disappointed in my expectation, since the animals always died in consequence of the disturbed state of the respiration which the injury of the nerves occasioned, before there was opportunity of ascertaining the effect produced on the process of digestion.

I had formerly ascertained, that in a dog poisoned by arsenic, there is a copious secretion of mucous and watery fluid from the mucous membrane of the stomach and intestines, which are in consequence found after death completely and preternaturally distended; and it occurred to me, that although I could not ascertain the effect of the division of the nerves of the eighth pair on the natural secretions of the stomach, it might be possible to ascertain the effect on a secretion thus artificially produced. With this view I instituted the following experiments:—

Exp. 1.—The nerves of the eighth pair, with the accompanying sympathetic nerves, were divided in the neck of a dog, and immediately afterwards ten grains of arsenic were inserted into a wound of the thigh. The breathing became

laborious, as is usual where these nerves are divided, and afterwards the same symptoms took place, as commonly arise from the poison of arsenic, with this difference, that there was no discharge of the fluid either from the stomach or intestines. He died at the end of three hours and a half. On dissection, the stomach was found to contain only food and feces, there being none of the mucous and watery secretion usually met with in an animal that has been killed in the same manner. The mucous membranes of the stomach and intestines were highly inflamed.

Exp. 2.—The experiment was repeated on another dog. He died at the end of nine hours; and on dissection the stomach and intestines were not found to contain any mucous or watery fluid. The mucous membrane was inflamed.

Exp. 3.—A dog immediately after the division of the same nerves of the neck, was made to swallow two ounces of a saturated solution of white oxyde of arsenic in water. He died at the expiration of three hours. On dissection, the stomach and intestines were found slightly inflamed, and they contained no mucous or watery fluid.

In these experiments the animals died from the application of arsenic, and the poison produced the usual symptoms, with the exception of copious mucous secretion, which takes place in other instances, from the stomach and intestines. The obvious conclusion was, that this secretion was prevented in consequence of the nervous influence having been interrupted by the division of the nerves of the eighth pair; but as the injury always induces a disturbed and laborious respiration, it was desirable to ascertain how far this circumstance might have operated towards the production of this effect, and I therefore repeated the experiment; but with this difference, that the nerves were divided in such a way as not to interfere with the functions of the lungs.

Exp. 4.—Having made an incision into the abdomen of a dog, immediately below the short ribs, I divided, by means of a bistoury, the stomachic ropes formed by the nerves of the eighth pair, where they are situated on the œsophagus,

immediately above the cardiac orifice of the stomach. The wound was closed by sutures. The respiration was not in the least disturbed, but was performed frequently, and with as much ease as under ordinary circumstances. The animal was afterwards inoculated in the thigh with the white oxyde of arsenic ; and he died in a few hours after the application of the poison, with the ordinary symptoms, except that there were no fluid evacuations from the stomach or intestines.

On dissection, the mucous membrane of the stomach and intestines was found inflamed. There was no watery or mucous fluid in the stomach or small intestines. There was a small quantity of mucus in the colon.

The result of this being the same as that of the former experiments, we may conclude that the suppression of the secretions in all of them was to be attributed solely to the division of the nerves : and all the facts which have been stated sufficiently demonstrate, that the secretions of the stomach and intestines are very much under the control of the nervous system. We cannot, indeed, venture to deduce from them any positive conclusions respecting the necessity of the nervous influence to the secretions in general ; but as forming one link in the chain of an interesting, but difficult, physiological investigation, the circumstances which have been mentioned, may, perhaps, be considered as possessing some value, and as worthy of being recorded.

It is proper to observe, that I have attempted to pursue the investigation, so as to ascertain the effect produced on the process of digestion, by the division of the stomachic ropes on the termination of the œsophagus ; but various circumstances, which it would be unnecessary to enumerate, have prevented my proceeding in the inquiry, and seem almost to render it impossible to make any observations on this subject.—*Phil. Trans. Part I. for* 1814.

VIII.

On Oil of Turpentine, &c. in Epilepsy. By Edward Percival, M. B. Dublin.

From the Edinburgh Medical and Surgical Journal, July, 1813.

Sir,—I beg leave to communicate to your valuable Journal, three cases of epilepsy, exhibiting the remedial effects of oil of turpentine in that singularly untractable disorder. Perhaps some of your ingenious correspondents may already have made trial of the same medicine internally, or may be able to refer me to some published account of its efficacy in epilepsy. My own search for information on this subject, which has in truth been less diligent than I could have wished, has hitherto been fruitless; and I am consequently ignorant whether my experiments have been anticipated by any preceding medical writer.

I should hesitate on the propriety of promulgating a method of remedial treatment whose success has been by no means complete, were it not that a certain degree of relief has been obtained by it, in a very formidable malady, and a ray of light afforded which other practitioners may extend and improve to more perfect success. The cases of epilepsy, in which I have employed the oil of turpentine internally, occurred to my professional care in the Hospital for Incurables near the city of Dublin. The subjects are females, and the disease was of great severity and some duration in each of them.

Elizabeth Wall, aged 20, of light complexion, inclining to florid, short neck, and full habit, has been subject to severe paroxysms of epilepsy for the space of four years. The first occurrence of the malady succeeded a violent blow

by a battledore on the crown of her head. The epileptic paroxysms have rapidly increased in frequency and severity. At the time of her admission to the Hospital for Incurables, in March, 1312, the fits usually occurred twice or thrice daily. The most protracted paroxysm, or rather unremitting succession of paroxysms, came on in the afternoon, and held the patient in alternate convulsions and fixed spasms of the lower extremities, the abdominal muscles and the fauces, for the space of four, five, and even eight hours. During a portion of this time the patient appeared to be perfectly insensible, but for the most part she exhibited signs of acute suffering. On emerging from these severe fits, she experienced for one or two hours great lassitude, and frequently fainted. During the course of her disorder, however, she did not suffer any loss of flesh; and her appetite was by no means deficient, though her digestion was weak. Her bowels were habitually costive, and the catamenia had been occasionally irregular.

The first remedies that I employed for her relief, were active purgatives, with calomel or the blue pill, until her mouth was slightly affected; then opium in full doses, preserving, at the same time, a free passage through her bowels. Afterwards I employed valerian, camphor, æther, and other remedies of the stimulating antispasmodic class; all of which were perfectly inefficacious. Blisters applied to the back and abdomen were attended with temporary benefit. The fits of epilepsy still continued frequent, severe, and protracted.

On the 18th of April, I directed two drachms of oil of turpentine to be diffused, in the way of emulsion, by syrup, in a pint of mint-water, an ounce of which was prescribed to be taken every four hours. On visiting my patient two days afterwards, I was agreeably surprised at learning that she had experienced no return of her convulsions after the first dose of her medicine. Neither I nor any of her attendants had prepared her to expect extraordinary efficacy from the draught, which she conceived to be peppermint water, and described to operate as a grateful cordial to her

stomach. On the second day the catamenia appeared, which had been previously suspended for six or seven weeks. She continued the use of the medicine for the space of a fortnight, during which period, her digestive organs were restored to a healthy tone, her animal spirits and her looks were greatly improved, and her mental faculties, which had been obtused and bewildered by the late severity of her disorder, recovered their natural energy.

From the date above mentioned, to the latter end of October, my patient continued free from any attack of convulsion or insensibility. But she had occasional cramps in the muscles of her abdomen, and wandering pains of the stomach and bowels. These ailments were relieved by frequent purgatives, and warm fomentations. The catamenia continued regular and satisfactory.

On the 4th of November I was informed that, during the preceding week, Wall had experienced three slight attacks of her former convulsions; I therefore directed for her half an ounce of oil of turpentine, to be diffused by syrup in a pint of mint-water, of which she took an ounce every four hours. The effects of this remedy were at first as decisive as before; but having neglected the state of her bowels, she complained to me, on the 14th of November, of headach and lassitude, which were succeeded by two mild epileptic fits on the same day. A few grains of calomel and cathartic extract removed a large load of feces, and the attendant symptoms of pain and restlessness. She continued the terebinthinate mixture for ten days longer, and, until the 11th of December, experienced no return of the epileptic paroxysm. A slight fit on that day induced me to renew the turpentine draught, and to increase its dose. An emulsion was directed, with an ounce of the ol. terebinth. in a pint of mint-water, of which two table spoonfuls, as before, were prescribed every four hours. From that period to the present, (February, 1812), she has continued free from any acute attack of epilepsy, being occasionally, however, subject to cramp or spasm of her abdomen. At these times she commonly reclines upon her bed,

and. if seized suddenly, will even fall, but never loses her recollection or sensibility. Her appetite, digestion, and sleep, are natural, her strength and spirits good, and her intellect perfect.

Jane Reid, aged 30, of low stature, plethoric habit, short neck, and florid countenance, has been subject to epileptic attacks of considerable severity, for the space of 14 years. They were at first excited by the alarm of seeing a man fall suddenly into convulsions, in one of the streets of Dublin. Her fits of epilepsy occur very irregularly, sometimes twice or thrice daily, at other times only twice in the week; these attacks usually subsist for about ten minutes, and the convulsion, though not very considerable, is always attended with perfect insensibility. Her bowels are remarkably torpid, her tongue generally foul, her face flushed, and she complains much of headach. The catamenia are tolerably regular and satisfactory. During the last eighteen or twenty months, her intellect has been much disturbed, and she is subject to alternate fits of dulness and frenzy. Active purgatives have relieved every pressing symptom, excepting the original disorder. With Reid, as with Wall, I made trial of all the usual antispasmodic and antiepileptic remedies, without the slightest benefit. On the 18th of April, I directed for her an emulsion with three drachms of oil of turpentine, half an ounce of syrup, and a pint of mint-water, an ounce of which she was desired to take every four hours. Her epileptic fits immediately ceased; she continued the medicine for a fortnight; when her intellect was perfectly restored, her spirits revived, and her looks greatly amended. The gratitude and astonishment which this poor woman manifested on receiving so great benefit to her health, were expressed in the most lively manner, with tears of joy. I may add, that in this, as in the preceding case, no expectations were held out of any sudden or extraordinary amendment.

About the 20th of October, Reid desired to have her terebinthinate mixture renewed, as she informed me, that for several weeks she had been troubled with uneasiness,

and threatenings of a return of her malady, whilst in bed, although she had had no distinct paroxysm since the 18th of April. The medicine was accordingly renewed; on which the catamenia appeared after a postponement of ten days or a fortnight beyond the proper period.

On the 14th of November, Reid had three fits of epilepsy in the course of 24 hours. On inquiry, I found that her bowels had been neglected, and were highly loaded and constipated. This accumulation being removed, she returned again to the turpentine emulsion, in the dose of one drachm of ol. terebinth. taken every four hours. From that period she continued entirely free from her epileptic fits until the beginning of December, when they began to recur every six or eight days, but in a much slighter degree than formerly. Her faculties became gradually much disturbed, and she was alternately dull and frantic, without any luminous intervals. On the 28th of December, and for some preceding days, she was confined by a strait-waistcoat, being perfectly maniacal.

Deeming the present a favorable opportunity for making trial of a large dose of fox-glove, which had been frequently represented to me as a radical cure for epilepsy, I directed, in concurrence with my friend and colleague Dr. Litton, that a decoction should be made of two drachms of the dried leaves of digitalis in six ounces of water, one half of which was given without delay, and the remaining half two hours afterwards. No sensible effect of any kind followed the exhibition of this medicine. The patient continued maniacal, had a natural evacuation of feces and urine, and showed no signs of nausea, languor, or enfeebled circulation. A few days afterwards, the same quantity of the dried leaves of digitalis was infused in the like proportion of water, and when cold was administered as before. It produced no apparent effect whatever. On the following day, and repeatedly afterwards, she had returns of the epileptic paroxysm, but improved gradually in the natural circumstances of bodily and intellectual health.

On the 31st of January, 1813, it was reported to me that, for several preceding days, she had severe epileptic

fits, and was frequently maniacal during the intervals. At the time of my visit to the hospital, she was calm and collected, her pulse was natural, her countenance somewhat anxious and variable; but her evacuations by stool had been copious, and her sleep was observed to have been sound and uninterrupted. Being solicitous to give the fullest trial of the efficacy of digitalis in so hopeless a case, I directed three drachms of the dried leaves to be decocted in six ounces of water, and to be given, the one half immediately, and the other after a lapse of two hours. Both of the draughts were duly administered, when, some time afterwards, nausea, vomiting, sweating, and at length purging, were induced to a considerable extent, and for several hours. On the following day she had two regular fits of her accustomed epilepsy, which have since recurred as frequently as they were accustomed to happen before the exhibition of the oil of turpentine.

Margaret Harrison, æt. 25, of middle stature, and plethoric habit, became subject to epilepsy eight years ago, from a sudden alarm. The paroxysm of her disorder occurred chiefly at night, when she had usually two or three mild fits, each enduring about a quarter of an hour. She was admitted to the hospital for Incurables in the summer of 1812. During the four preceding years she had experienced no menstrual discharge. Her general health and strength have appeared good, her appetite rather voracious, but her intellect has been obtused, approaching to fatuity. July 15, 1812.—I directed for her pills of myrrh, steel and aloes, which, in the course of a few days, induced a return of the catamenia. Her understanding consequently improved, her conduct became more regular and amenable, yet her epileptic fits recurred without any mitigation. She commenced the terebinthinate mixture on the 4th of November, in the proportion of three drachms of ol. terebinth. to a pint of mint-water, which had an immediate effect in abating the frequency and duration of her fits. She became more lively, and for the first time replied to a query of mine, by saying that the medicine had done her great service.

Until the 4th of December her fits of epilepsy had nearly disappeared, when, without any manifest cause, they began to recur in a mitigated and less frequent degree than formerly. I directed for her a mixture, with one ounce of oil of turpentine in a pint of mint-water, of which she took two table spoonfuls every fourth hour, with immediate and decided benefit. On the 29th of the same month it was reported to me that she had relapsed to her former epileptic habits; though her fits were somewhat less frequent, and certainly more gentle than before the use of the terebinthinate mixture.

On the 31st of January 1813, I directed a decoction of two drachms of the dried leaves of fox-glove to be administered in divided doses, with as little interval as possible. The effect of this medicine was, extreme nausea, vomiting, and subsequently purging, which continued for the space of eight or ten hours. The fits of epilepsy, however, began shortly to recur as before, with less violence than previous to the use of terpentine, but apparently unmitigated by the administration of digitalis. Her fatuity continued without interval or abatement.

It is essential to remark of the three foregoing cases, that the free use of the turpentine, even to the amount of several drachms taken in the course of the day, produced no distressing symptom, either of the urinary organs or of the stomach or bowels; on the contrary, it proved a grateful cordial, strengthening the powers of digestion, and gently promoting intestinal and renal action. I had no reason to suspect the presence of worms in either of the cases; nor was it discovered that any were voided during the use of the oil of turpentine. The only specific action of that drug was apparently emmenagogue; a hint not undeserving of application to other cases.

I purpose hereafter to give a more full and extended trial of the efficacy of this remedy in epilepsies of various kinds; and may therefore again trespass on your indulgence, by further communications on this interesting subject.—In the meantime, I remain, &c.

CONCLAVE CADAVERIS.

I.

Examination of a Case of Fracture of the Pelvis, communicated by Dr. Joseph M. Smith, *of New-York.*

On Saturday last, 8th January, 1814, E. S. aged 23, boatman, in the act of jumping from the bow of a sloop deeply loaded, which was slowly approaching a vessel that lay at the wharf, slipped his foot, and lodged between the gunwales of the two vessels; by which accident the pelvis was violently jammed. Being extricated from this situation, he was carried to a store in the neighborhood; where I first saw him, in company with Dr. Baldwin. Having partially recovered from the shock the nervous system sustained, he complained of intolerable pain about the pelvis, and an inclination to make water; but was unable to void a drop.

This not being a convenient place for an examination, we directed his friends to convey him to his residence in the Bowery Road. After he was laid in bed, we proceeded to a manual examination of the bones of the pelvis, which we presumed were fractured; and, indeed, which a by-stander at the time of the accident, informed me, he heard distinctly crush. The sacrum and pubis being the parts which came in contact with the gunwales, were first examined; but with our whole attention directed to this object, no fracture could be detected. The illia and thigh bones were in their natural condition. Turning the patient on his side occasioned great pain, as did also raising him in bed. The inferior extremities were under the control of the will; they could be rotated without much increase of pain, but flexion excited great distress. No marks of ex-

ternal violence were to be seen, except a slight abrusion of the skin on the anterior part of the penis, and on one of the thighs. The patient being plethoric we bled him to the amount of twelve ounces, and ordered a dose of the sulphate of soda; directing at the same time the application of tepid fomentations to the injured parts. The following day (Sunday) we found the abdomen tumid, more especially the hypogastric region, which appeared to arise from retention of urine; the patient having passed none since he received the injury. No distinct circumscription, however, indicating a distended bladder, was evident. The scrotum was distended and somewhat inflamed. The pain he now suffered, was referred principally to the region of the sacrum; he complained, however, of considerable pain at the pubis, especially when the part was pressed by the hand. The inclination to evacuate the bladder was extremely urgent. The pulse being full and strong we again bled him, and ordered the use of enemeta; by which means his bowels were kept soluble. In a short time after, two physicians saw him in consultation, and it was agreed, that an attempt should be made to relieve him by the catheter. Accordingly the operation was immediately instituted. Upon passing the catheter down the urethra to the perineum, a small quantity of blood escaped from the urethra by the side of the instrument. At the neck of the bladder the passage of the catheter was arrested; and after several trials the operator declared its introduction to be impracticable. About half a gill of bloody urine ran off through the catheter. After the catheter was withdrawn the urine began to flow involuntarily in small quantities, and continued so until his death. Such medicines were ordered as are calculated to obviate inflammation.

On Monday the circulation in the extremities became languid, and the face pale. The pain continued violent about the sacrum and pubis; the belly was more tumified, and the scrotum considerably enlarged.

On Tuesday the pulse became imperceptible—respiration interrupted and quick, and he lay in a comatose state until 11 o'clock, A. M. when he expired.

From the manner the injury was inflicted, it was suspected that much greater mischief was done than was apparent. This suspicion was confirmed by the facts disclosed on examining the body after death.

Jan. 13th, 1815.—Dissection by Dr. Mott. On cutting through the integuments of the abdomen in the direction of the linea alba, a large quantity of extravasated blood appeared in the hypogastric region, and extended into both groins. The abdomen, when opened, shewed no marks of extensive peritoneal inflammation; the bladder was adhering firmly to the parietes, and a thickened substance connected it almost as high as the umbilicus. The peritoneum covering the fundus of the bladder, rectum, and as it extended upon the lumber vertebræ was of a dark bluish black color, and easily torn with the finger or nail. Upon cutting out the bladder, it was larger than the natural empty bladder, and contained a small quantity of urine,—it was about six times thicker than the bladder when sound, and in a state of gangrene, and emitting an offensive smell. It was easily inflated with a blow-pipe after it was cut out.

Passing the hand around the brim of the pelvis, the pubis was found fractured about an inch distant from the symphisis on each side, and the piece a little drove inward. On detaching the penis and muscles on the outside, it could be moved a little; on examining still further, the ramus of each ischium was also fractured, and when the knife was passed through each thyroid hole, and the soft parts completely detached, the piece was without much difficulty taken out. A piece of the body of the left pubis, where it joins with the illium, about an inch in length, was next removed. The scrotum and penis, were of a dark livid colour, and the cellular substance filled with urine. The scrotum was four times its natural size.

The infiltration of urine into the cellular substance of the scrotum and penis, no doubt was occasioned by the laceration of the urethra; but at what part it was ruptured, our time and the situation of the body would not permit us to ascertain.

II.

Examination of a Case of supposed Hepatitis, communicated by T. W. BLATCHFORD, *Student of Medicine, and Resident Physician in the New-York State-Prison.*

G. T. aged 46, of a phlegmatic temperament, was admitted into the Hospital about fourteen months since. He complained of pain and considerable swelling of the right side, in the region of the liver.

A few months had now elapsed when he was attacked with pain in the region of the stomach, and a constant discharge from that organ of a black dirty substance, of a thick consistence, which the physician, then in attendance, denominated MORBUS NIGRI; this continued for three or four months, when the symptoms preceding this discharge again returned.*

About the commencement of August, his pulse was small, and his respiration difficult. His stomach was much disordered. He was ordinarily satisfied with two meals in the week, and these composed of either raw turnips, carrots, parsnips, cabbage, or apples. He generally refused any kind of animal food; but one day he desired the lungs of a lamb or sheep, which accordingly were procured; he had half an ounce immediately prepared, which he took and retained upon his stomach; the remaining part he salted down, and occasionally had a piece prepared; this one lasted him amply for two weeks; his stomach then rejected it.

His drinks were, when it could be procured, a little cider,

* I regret not being able in a more particular manner to learn the history of the case; but that part collected, I believe, we may rest assured is authentic.

but ordinarily a half pint of milk-punch per day, together with a little gin. His bowels were remarkably costive, going from ten days to a fortnight without a discharge, and then it was usually assisted by medicine; the discharge was thin and remarkably white. A few weeks previous to the termination of his complaints, an ungovernable diarrhœa ensued, which ceased only with his breath. A thick and muddy sediment was deposited in his urine, and he complained of great pain in the discharge of it. The colour of his skin was of a whitish yellow, resembling a corpse more than any thing possessing animation. The pain in the region of the liver, and in the right shoulder, was constant. His levity was astonishing. It was but a few weeks before his death that he complained of much weakness.

The appearances upon dissection were the following.

The lungs were much diseased; adhesions to the pleura and the diaphragm were very extensive—also very large and numerous tubercles were found. The heart was sound. The pericardium, however, contained rather more fluid than natural. The liver being removed, and various sections of it made, was found perfectly sound, and no ways preternaturally enlarged. A large tumor occupied full seven eighths of the stomach. The whole length of the stomach was five inches, its breadth three and a half. The tumor occupied the upper portion of the stomach, leaving the pylorus perfect; the upper part of the tumor was hard, much resembling muscle; the under part was softer and of a lighter color. It was then divided, two thirds of it were solid, the other part was filled with a thick yellowish pus, the sack was separate from the stomach or the other part of the tumor. The portion of the stomach appropriated for the food, was not larger than a hen's egg, a tube led to it along the upper side of the tumor, making a preternatural cardia, or more properly resembling an elongation of the œsophagus. In the mesentery were found many tumors containing pus. Nothing preternatural was observed upon the other viscera.

III.

Examination of a Man said to have died of Old Age. By Henry U. Onderdonk, *M. D.*

H. H. aged 67, died, May 15th, 1814, of old age and debility. Has had no fit of sickness for a long period.

On examination both lungs were found of healthy structure, except a few tubercles. Right lung had some adhesion, and left lung was universally adherent by a soft cellular structure. Heart natural, but rather small.

Liver had some similar adhesions to the diaphragm, and also to the spleen. A portion of the transverse arch of the colon was seen lying above the stomach, but this was probably a natural irregularity, and not a hernia; for the mesogastrion was deficient, or rather there was a peritoneal covering over the portion of colon, reaching from the stomach to the spine. The pancreas laid above this portion of the colon. The stomach was rather small. A fold of the jejunum, and another of the ilium, (some distance below), adhered to the peritoneum about the caput coli; and this was easily rent, so as to give discharge to the fæces. The descending colon was much contracted.

Between the arachnoides and pia-mater, was a very great effusion of serum, so as to separate them at the folds to half an inch distance. The left ventricle contained a little fluid, and the right, about twice as much, say half an ounce.

The femeral arteries were ossified.

IV.

Examination of a Case of Hydrocephalus Externus. By Dr. Nehemiah Brush.

A. B. aged fourteen months, after a fall on the head, was seized with symptoms of hydrocephalus. He was treated diligently with the general and topical means usually employed in that disease, but died the 17th day after the injury.

Assisted by Dr. Mott and Dr. Ives, I examined the head six hours after death. On removing, by a transverse section, the upper part of the cranium, and opening through the dura mater, from four to six ounces of water were discharged from between it and the brain. Large watery, or serous effusions were also observed between the hemispheres and convolutions of the brain. On opening into the lateral ventricles, they were found to contain about an ounce of a similar fluid. The coverings and the substance of the brain exhibited a natural healthy appearance.

V.

Examination of William Twaits, esq. the Comedian. By *the* Editors.

Mr. Twaits had labored under a very severe asthmatic affection, and his voice was almost entirely lost. The day after his death, Dr. M'Lean, who had attended him, requested the editors to assist in the examination.

The stomach was contracted at its smaller extremity, and

several other contractions were observed in the small and large intestines, but they were of no importance. Gall-bladder large, and full of yellow bile. The rest of the abdomen natural.

The lungs were adherent to the pleura costalis universally, and when cut into, exhibited a compact texture; one very small vomica was noticed. The heart natural. Cartilages of the ribs considerably ossified.

The œsophagus had a small contraction near its upper part, which, however, gave way to a finger introduced. The cartilages of the larynx were partly ossified, and both they and the soft parts somewhat thickened; the lining membrane rough, as if from chronic inflammation. Sacculus laryngis of the right side entirely obliterated, that of the left side not so completely effaced. The trachea was very large and the muscles of the voice very strong.—Were not these morbid appearances of the larynx produced by the frequent and powerful efforts of the voice in his public exercises?

VI.

Examination of a case, in which the left arm was torn from the body, accompanied with a fracture of the Cervical vertebræ. *By* VALENTINE MOTT, *M. D.*

As the Steam Boat Nassau was returning from Long Island to New-York, the chief engineer Lewis Rhoda, not being pleased with the movement of the machinery, as she was coming into the dock, went to examine it. The engine being still, he reached his arm between the *balance beam and shackle* bar, to adjust or examine some part of the machinery, and while in this situation, calls out to one of the men to let go, by which the engine was set in motion. The starting of the engine being much more sudden than either of them anticipated, caught Rhoda's arm, and tore

it from the body, except a little fragment of muscle which was cut with a pen knife. At the moment the engine started, or after his arm was torn off, something caught his cravat, and dragged him head long among the works, by which the lower jaw was fractured near the posterior angle, with a wound about two inches in length, and the neck very much injured.

Dr. Birch being upon the dock at the time, went on board and with his pen knife, cut a little fragment of muscle and his coat, by which the extremity was removed. I arrived in a few minutes and found him lying on a mattress on deck, with a pale and ghastly countenance, exclaiming that he was a dead man. Great fears were entertained by many present, that he would soon bleed to death; of which we however assured them there was no danger. I then went below to examine the arm, and found the bone not out at the shoulder joint as was first believed, but torn off about the insertion of the deltoid muscle, with a little obliquity of fracture, and only one small splinter, which was attached to the upper part or stump.

We removed him as soon as possible, to the house of a friend a short distance from the boat, in order to have him more comfortable and make it more convenient to do what was necessary. After carefully examining the stump we concluded to amputate it, and not take the arm off at the shoulder joint, which at first seemed almost indispensable. As there was no room to apply the tourniquet upon the arm, and fearing that the restlessness of the patient would not make it safe to trust to compression above the clavicle, I took up the artery in the axilla, where it was felt pulsating; presuming that there the artery was sound, and that the ligature would be safe. I then amputated the stump in the presence of Dr. Birch, Dr. Seaman and a number of other medical gentlemen, so that the incision through the muscles was made close to the ligature, and the bone sawed through, from one to two inches below the joint. The parts that were cut through appeared perfectly sound and natural, not the least laceration of muscle or extravasa-

tion of blood to be seen. After securing several small arteries, the stump was dressed in the usual way.

The wound on the right side of the face was next examined. It extended across the lower jaw near the posterior angle, and terminated in the anterior part of the parrotid gland, about two inches in length. Upon introducing the finger into the wound, it passed readily into the mouth, and one of the molares teeth being loosened by the fracture of the lower jaw near the posterior angle, was easily removed through the mouth. The wound was drawn together with adhesive plaister and dressed in the usual way.

After this he was removed to bed, and his breathing which at first seemed very little affected, now became quick and laborious, appearing to be performed altogether by the diaphragm. It was now discovered that he was unable to move himself in the least degree, and upon examining his superior and inferior extremities they were found entirely useless, though when pinched he complained of pain, but the power of motion was lost. From these symptoms we did not hesitate to conclude that there was a fracture of the cervical vertebræ, of which the poor patient seemed conscious, for he was continually saying that his neck was broke. He continued very restless, and his breathing more and more laborious, and died in the full possession of his senses, three hours and a half after the receipt of the injury.*

Dissection six hours after death. The neck appeared much thicker than natural, but shewed no marks of

*** I have lately attended a patient who died in forty-eight hours after a fracture of the cervical vertebræ. He was said to have been struck upon his neck, and knocked out of the chair upon the floor.—On examination no ecchymosis or mark of violence appeared upon the neck, but upon making an incision through the muscles, a larger extravasation was found about the spinous processes generally, but greatest about the fourth and fifth vertebræ.—As proof was not produced at the Inquest, that he had been struck, and if it had, would it not have been most safe to have attributed the fracture to the fall from his chair, (he being addicted to intoxication) particularly as there were no marks of external violence.—Can a person have his neck fractured by a blow, while covered with his clothes, without leaving any appearance of bruise or extravasation? is a question, that may perhaps be worthy the attention of the cultivators of Legal or Forensic medicine.**

external violence. On making an incision into it at the posterior part, in the course of the spine, a very large quantity of blood was extravasated among the muscles and discharged in a fluid state (say 10 or 12 ounces) which very much embarrassed us in the examination. Dr. Ives and myself after a good deal of difficulty removed the cervical vertebræ; upon inspection, the spinous process of the third and fourth vertebræ was found fractured, and depressed below the level of the other vertebræ, so that some compression of the spinal marrow must have been produced immediately. The compression however must at first have been trifling, for upon macerating and cleaning the vertebræ but very little irregularity was discoverable upon looking through the spinal canal. It soon however increased, in consequence no doubt of the gradual extravasation of blood in the spinal canal and the theca vertebralis; so that before his death, there was a complete loss of voluntary motion in all the parts below the neck. His voice from the first was very much injured, being able only to speak in a hoarse kind of whisper.*

The arm and stump upon being examined, exhibited a different appearance from what is generally seen in extremities that are torn (as is generally expressed) from the body; this was more particularly the case however with the arteries and veins. The muscles were torn from the osbracchii near the elbow, and contracted about the stump in a large and irregular bundle; the osbracchii was exposed for 5 or 6 inches above the joint of the elbow, except on the posterior and inner part, when a portion of the triceps extensor cubiti muscle and ulnar nerve extended half the length of the bone. The ends of the muscles and nerves had a very ragged, irregular and lacerated appearance. The extremities of the arteries and veins had quite a different look. The artery of the stump was extracted about two inches from the extremities of the muscles, and upon being drawn

* Our readers will readily perceive a striking illustration of the doctrine of the late celebrated Dr. Le Gallois, in these two cases.—See our Review of his experiments on the Principle of Life, in the present number.

out, instead of the ragged fimbriated appearance, which is generally described as taking place in lacerated arteries, its extremity was as regular and smooth as if divided transversly by a keen cutting instrument. It had not a patulous or open mouth, as we generally see when arteries are divided, but it was so contracted as nearly to obliterate its calibre altogether; and appeared almost like a solid cord, for an inch from its extremity. About an inch from the end of the artery, the blood effused in the cellular sheath of the vessels, had formed a coagulum which pressed upon the artery and completely prevented the flow of blood; the artery for more than an inch above the coagulum was so much contracted that it exhibited but a small diameter. It was above this contracted part that the artery could be felt pulsating, and where, of course it was cut upon and taken up before the amputation of the stump. The veins had their diameters very much diminished for more than an inch from their divided extremities though much less in proportion than the arteries. The same appearances were observed by John Bell of Edinburgh, in the case of a miller who had his arm torn from the body.*

The vessels of the arm exhibited the same appearances, but in a much less degree.

The flow of blood from the extremity of the artery must have been prevented by the muscular contraction of the artery itself, aided in some degree by the pressure of the coagulum within the sheath of the vessels. The canal of the artery being scarcely pervious for about two inches from the extremity, would of itself arrest the flow of blood, when aided by the contraction and pressure of the surrounding muscles, without the assistance of the coagulum. No coagulum was found plugging up the end of the artery of a conical form, and adhering to its sides, no ragged or fimbriated extremity of artery to aid in suddenly arresting the flow of blood. Might not the simple contraction of the artery in this case, of itself, have been quite sufficient for the purpose?

* See Dr. Onderdonk's memoir, Medical Magazine, 1814, case 6, p. 159.

VII.

Examination of a Young Woman, in whom the left Ventricle of the Heart was found ruptured. *By* VALENTINE MOTT, *M. D.*

On the 16th of 5th month, 1814, I was requested by the Coroner to examine the body of Betsy M'Bride, aged 22 years, who had been found dead in bed in the morning. It appeared that she had led a very irregular and profligate life, being a courtezan.

She was found lying upon the right side, with the knees drawn up, in the most natural and easy posture of sleep, and to most persons, at first sight, would have been thought so. Her countenance was rather purple, and the neck, and one side of the face, seemed a good deal suffused with blood. She had every appearance of having enjoyed a good state of health, and was a good deal inclined to obesity.

On opening the abdomen, the viscera appeared generally to be in a healthy state, except the liver, which was rather larger, and of a pale whitish colour. It adhered very generally to the peritoneum lining, the parietes of the chest, abdomen, and diaphragm, by the most beautiful arrangement of coagulable lymph, of an inch or more in length, and from the size of small fine shreds to an inch or two in width.

The chest was next examined, and upon raising the sternum from the diaphragm, and cutting into the pericardium, a large coagulum of blood presented itself, which was covering the heart on every part, so that it completely filled the cavity of the pericardium. This was removed, and amounted to from eight to ten ounces, with about two ounces of serum. The heart appeared of the usual size, and very fat; upon lifting up the apex of it, the source of

the blood was immediately discovered to be from an opening about half an inch long, in the upper part of the left ventricle, of an irregular lacerated look. Around the opening the parietes were considerably thinner than natural, and upon examining with the fingers attentively, there could be discovered a fluctuation about an inch on one side of the opening; a few flakes of a cheesy like substance were discharged from the opening upon pressure. The pericardium had generally a natural look, excepting a space about the size of a dollar, or a little larger, opposite the opening in the heart, there were strong evidences of inflammation, about the size of a six-pence, and it adhered firmly to the upper part of the left ventricle. That part of the aorta which is generally said to be within the pericardium, shewed, on one side, some vestiges of inflammation. These were the external appearances which the heart exhibited.

The heart, pericardium, and large vessels belonging to it, were removed from the body to undergo a more minute examination. The right auricle being opened from the inferior cava, exhibited a natural appearance. Continuing the dissection into the right ventricle, from the auricle, there was nothing unnatural to be seen. The left auricle was next opened from one of the pulmonary veins, and then the left ventricle; both of which appeared generally natural. In the left ventricle, however, about an inch from the opening of the aorta, on the left side, and immediately under the left carnea columna, an opening of an eliptical form was discovered, sufficiently large to admit the end of the little finger. It was smaller than the external opening, and directly opposite; both openings communicated with an abscess in the parietes of the left ventricle, about the size of a small hen's egg. It was to the upper part of the thin covering of this abscess that the pericardium was attached. The aortal, pulmonary, and ventrical valves were all natural.

As might be expected, in such cases, we could not learn any thing minute or very satisfactory as to her health pre-

vious to the accident. She appears to have shown no indisposition, except a pain in one of her arms, and one person stated that she had complained for a fortnight of some pain in her chest—both of which might have been rheumatic, as she had for some time been affected with it. However humorous and curious it may seem, her lover, I am correctly informed, deserted her the day before her death, which for some hours affected her so much, that she was seen sobbing and crying by the family. This interview took place in the early part of the evening, after which she took supper, and retired rather dejected, as they say, perhaps, than otherwise. What agency the operation of this tender passion may have had in producing her death, I leave to the curious to determine; she, however, literally, if not amorously, died of a broken heart.

INTELLIGENCE.

FOREIGN.

Singular Disease, from Thompson's Annals of Philosophy, July, 1814.

In the country of Nogays, a tribe of Tartars, dwelling between the Black Sea and the Caspian, on the south side of the Kuma, there still exists a very singular disease, which is mentioned by Heroditus, and several of the other ancient Greek writers. Heroditus informs us that when the Scythians were inhabitants of Asia, they advanced towards Egypt; but were prevailed upon by Psammetichus, king of that country, to desist. On their return through Syria, they plundered the temples of Urania, in the city of Askalon. In consequence of this, the goddess sent a feminine disease among them.

Reineggs is the first modern writer who mentions the present existence of this disease among the Nogays, who are at present subjects of the Russian empire. Count Potocki, when travelling along the Kuma, in 1798, met with an old man who had this disease. He informs us that such

persons are called Coss; and that the disease is not unknown in Turkey, where those subject to it have received the same appellation. The disease, as far as it has been described by Reineggs and Potocki, is distinguished by the following symptoms. It only attacks old persons. The skin grows wrinkled, the beard falls off, and the person assumes completely the appearance of a woman. He becomes incapable of propagating his species, and his sentiments and actions lose their masculine character. In this state he is obliged to shun the company of men, and to associate with women, whom he perfectly resembles. The disease is now rare.

From the Edinburgh Medical and Surgical Journal, October, 1814.

Mr. Price Wynnes, an English apothecary, has treated hydrophobia successfully by copious blood-letting, after the plan recommended by Drs. Schoolbred and Tymon, of India. He insists upon the necessity of abstracting the blood very rapidly, so as to induce syncope. Twenty ounces of blood were taken from his patient in six minutes, when he fainted; and he states that the pulse could scarcely be felt for an hour. When he recovered, all the distress of countenance left him, and he asked for drink, which he took, and was very much refreshed; the bare mention of which before, occasioned indescribable suffering. The next morning some threatening symptoms appearing, he was again bled, with the same happy effect. No further symptoms recurred, and the patient recovered.

From the Edinburgh Medical and Surgical Journal, April, 1814.

Alexander Macauley, a British Naval Surgeon, when at Calcutta, tied the left carotid artery, for a wound about the posterior angle of the jaw, and the patient recovered He applied two ligatures, and divided the artery between them; and, "as I was doubtful," says he, "of the one next the heart, I put one more on that part of the vessel, previous to dividing it." Had he been acquainted with the practice of passing the ligature through the artery, the other ligature perhaps would not have been applied.

From the Journal de Physique, tom. lxviii. p. 237.

The discovery of Morichini, who first found fluoric acid in animal substances, and obtained it from the teeth, has been confirmed by Berzelius. He has procured this acid from other human bones besides the teeth, and also from the bones of the ox; and ascertained that every 100 parts of these bones contain two parts of the fluat of lime.

He has also discovered that fluoric acid exists in urine.

From the Annales de Chemie tom. lxxxviii. p. 100.

Diabetic Urine.—Dr. John has found that diabetic urine, although devoid of urea and gelatine; yet contains azote, sugar, animal gum, urate of potass, sulphate of potass, muriate of soda and ammonia, phosphate of magnesia, and phosphate of iron.

From the London Med. Surg. et Pharmaceut. Rep. for October, 1814.

Water of the Nile.—According to Dr. Clarke the traveller, who analyzed this water, it contains the carbonate of magnesia, lime, and iron; the muriate of soda; and a small portion of silex and alumen. It is one of the purest of known waters; remarkable for its easy digestion by the stomach, and for its salutary qualities in all the uses to which it is applied. The mud or slime left by this water is found to consist principally of alumen in a state of great purity; it contains half its weight of this substance: the rest is carbonate of lime, water, carbon, iron-oxyde, silex, and carbonate of magnesia. It is found a sufficient manure for the land, without any dung.

Mem. de l'Acad. de St. Petersburg. tom. iii. p. 76.

Gum of Lichens.—M. Pallas having stated that the Cossacks of Ouval use as bread the lichen esculentus, in times of scarcity, under the name of bread of the desert, Kirchoff, a Russian chemist, was desired by the Petersburgh Academy, to analyze this species of lichen, and also that denominated corolloides. He found in 100 parts of the first species, 13 parts, and in an equal quantity of the second, 14 parts of a transparent gummy matter, of a yellow colour approach-

ing to brown, and perfectly analagous to gum Arabic; the relations which the solutions of this substance and of the true gum Arabic have with other bodies being exactly the same, M. Kirchoff found that the gummy matter is more abundant in these lichens, if they be collected before they have arrived at complete maturity.

We are informed by an intelligent friend lately from Europe, that the *internal illiac* artery has been successfully taken up for a Gluteal Aneurism. It was performed by an English Surgeon in the West-Indies, by an incision through the parietes of the abdomen, similar to that for securing the external illiac.

DOMESTIC.

A singular instance of inanition has fallen under our observation, in the case of a black girl, aged 19; servant of a respectable gentleman in this city. She is of a phlegmatic temperament, of unaffected simplicity of manners, and has always conducted with the utmost fidelity as a servant. She has been uniformly healthy, excepting a cessation of her menstrual discharge for a few months past, and even that did not affect her general health. In consequence of a depression of spirits, produced by an unmerited reproach from her master, she resolved on fasting till he was satisfied of her innocence.

She says that after going without food two days, she had no disposition to eat any, and when she made the attempt a small quantity gave her pain in the stomach. From that time which was about the first of June, she took no solid food, during the three succeeding weeks. She then ate three small biscuit or crackers, but as they produced pain in her stomach and as her appetite did not return, she could not be persuaded to take any more until the expiration of six weeks. For two weeks succeeding this time, she was confined to her room by excoriations produced by the acrimony of her urine, and a sainious discharge from the vagina.

During this time she was persuaded to take five crack-

ers boiled in water with a little milk. She was now inabled to return to her labor, but continued without taking any animal food till the 12th, of October. On particular enquiry we were now informed by the gentleman and lady with whom she lived (and we believe them to be of unquestionable veracity) that during the last four months she had been constantly at home, that she had no communication with friends or neighbors,—that she had attended faithfully to her domestic duty, and with the exception of the two weeks above alluded to, she had enjoyed good health—That she had taken no solid food but what had been mentioned—That she usually drank about half a pint of cider a day and that upon it alone they believed she subsisted. That she had taken repeated doses of neutral salts and castor oil, but had had no evacuation from her bowels during the whole time.

As there was not the emaciation of body or diminution of strength indicative of total abstinence, we could give but little credit to a detail so improbable ; but from the candid and ingenuous conduct of the girl, the unqualified testimony of the family in which she lived, and particularly, from the state of her excretions, we were led to give the case a more particular investigation. With her own consent she was confined to a small room for two weeks with the provision that she might have any thing to eat or drink which she should request. During this time she ate nothing nor had she any evacuation from the bowels. She subsisted upon cider and water; of which she drank half a pint daily. Her strength was somewhat impaired and she diminished in weight fourteen pounds.

The femoral (or rather inguinal) aneurism mentioned in our first number, was successfully operated upon by Dr. Post, by taking up the external illiac artery. The tumor extended so far above Poupart's ligament, and adhered so firmly to the peritoneum, that it could not be separated—the peritoneum was divided—only one ligature was applied.

END OF VOL. I.